



Standard Test Method for Total Wax Content of Corrugated Paperboard¹

This standard is issued under the fixed designation D 3344; 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.

^{ε1} NOTE—Warning notes were placed in the text editorially in December 2000.

1. Scope

1.1 This test method covers the determination of the weight of wax that is present in a specimen of wax-treated corrugated paperboard. The test method is applicable to specimens that have been waxed by either impregnation (saturation) operations or coating operations, or combinations of such operations.

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.* For precautionary statement, see 5.4 and 7.2.

2. Terminology

2.1 Definitions:

2.1.1 *weight percent wax content*—the weight percent of wax present in and on corrugated board relative to the weight of unwaxed board substrate measured at 23°C (73°F) and 50 % relative humidity.

2.1.2 *weight of applied wax coating*—the weight of wax that has been applied to the corrugated board as a coating, expressed as weight per unit area, usually grams of coating per square metre or pounds of coating per thousand square feet of board covered.

NOTE 1—When it is known that a wax-coated specimen has no impregnating wax present, this extraction procedure is normally calculated to express the data as “weight of applied wax coating.”

3. Summary of Test Method

3.1 The total quantity of wax associated with the corrugated board specimen is determined by extracting the wax from the board and evaporating the extract to dryness.

4. Significance and Use

4.1 Many of the functional properties of wax-treated corrugated paperboard and cartons are dependent on the amount of wax present.

4.2 In the case of wax-saturated, or wax-impregnated, paperboard the principal concern is with the weight of wax used relative to the weight of paperboard present, that is, the weight percent content or pickup. In some applications the saturating wax may be deposited in the three elements of the corrugated board in such a way as to individually control the amount in each element, that is, the medium and the two facings.

4.3 In the case of wax-coated corrugated paperboard the principal concern is the weight of wax on the board surface per unit area. The functional values of the wax coating as a barrier or a decorative coating are dependent, in part, on the amount of wax in the continuous surface layer, relative to the *area* covered. The weight of coating relative to the *weight* of substrate is not usually a concern with regard to product quality.

5. Apparatus

5.1 *Sample Trimming Equipment*—A suitable trimming board or template arrangement equipped with a razor edge knife for even cutting of specimens so that they have parallel sides and are of the right size. (A guillotine-type paper cutter is not recommended.)

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

5.3 *Beakers*, 1000-cm³, Griffin-type.

5.4 *Solvent*²—Chlorinated hydrocarbon solvent, 1,1,1-trichloroethane. (**Warning**—May cause irritation. Avoid contact with the eyes, skin, and clothing. Use only with adequate ventilation. Avoid prolonged breathing of vapor or spray mist. Avoid prolonged or repeated contact with skin. Do not take internally.) The solvent used should be residue-free, and should be checked for a residue upon evaporation before using.

5.5 *Steel Screen*,³ 325-mesh, approximately 150 mm in diameter, to fit into a funnel.

5.6 *Glass Funnel*, approximately 100 mm in diameter.

5.7 *Watch Glasses*.

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

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² A suitable solvent is Inhibisol (Brand), Amerace-Esna Corp., Chemical Specialties Division, Tenafly, NJ 07670.

³ A suitable stainless steel SS304, 325 mesh screen (0.0014-in. wire diameter, 0.0017-in. opening) may be obtained from Newark Wire Cloth Co., 351 Verona Ave., Newark, NJ 07104.