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AMERICAN SOCIETY FOR TESTING AND MATERIALS
100 Barr Harbor Dr., West Conshohocken, PA 19428
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# Standard Test Method for Gloss Retention of Waxed Paper and Paperboard After Storage at 40°C (104°F)[1]

This standard is issued under the fixed designation D 2895; 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 is intended primarily to measure the gloss retention of waxed specimens exhibiting relatively good gloss.

1.2 The values stated in acceptable metric units are to be regarded as the standard. The values in parentheses are for information only.

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:*

D 1834 Test Method for 20° Specular Gloss of Waxed Paper[2]

## 3. Terminology

3.1 *Definitions:*

3.1.1 *gloss retention*—the percent of the original gloss retained by the specimen after aging under specified conditions. It is the final gloss divided by the initial gloss, multiplied by 100.

## 4. Summary of Test Method

4.1 The initial gloss of waxed paper or paperboard is measured in accordance with Test Method D 1834, then remeasured after aging the sample for 1 and 7 days in an oven at 40°C (104°F). The 1-day test is to observe trends. The 7-day test is the standard test.

## 5. Significance and Use

5.1 The specified aging conditions are intended to correlate with the conditions likely to occur in the handling and storage of waxed paper and paperboard.

## 6. Apparatus

6.1 *Forced-Draft Oven*, capable of maintaining a temperature of 40 ± 0.6°C (104 ± 1°F).

6.2 *Rack*, with clips or pegs for holding specimens, so that free circulation of air will be obtained around the specimens, and so that the surfaces to be tested will be prevented from touching each other or parts of the oven.

6.3 *Glossmeter* meeting the requirements of Test Method D 1834.

## 7. Test Specimens

7.1 The test specimens shall consist of five pieces cut from different portions of the test sample. The test pieces shall be touched only on the edges. They must not come in contact with abrasives, oils, or dusty materials, and must not be exposed to sunlight or heat, except for the temperature condition specified in the oven.

## 8. Procedure

8.1 Obtain the initial gloss of the specimens in accordance with Test Method D 1834.

8.2 Place the specimens in the oven with pegs or clips to separate them.

8.3 After 1 day remove the specimens, allow them to cool, remeasure gloss in accordance 8.1, and return the samples to the oven. After a total of 7 days, remove the specimens for final measurement.

## 9. Calculation

9.1 Calculate percent gloss retention as follows:

$$\text{Gloss retention, \%} = (\text{final gloss/initial gloss}) \times 100 \quad (1)$$

## 10. Report

10.1 Report initial gloss, final gloss, and percent gloss retention.

## 11. Precision and Bias

11.1 The precision of this test method as determined by statistical examination of interlaboratory results is as follows:

11.1.1 *Repeatability*—The difference between two test results, obtained by the same operator with the same apparatus under constant operating conditions on identical test material,

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[2] *Annual Book of ASTM Standards*, Vol 05.01.

would in the long run, in the normal and correct operation of the test method, exceed the following values only in one case in twenty:

5 %

11.1.2 *Reproducibility*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the long run, in the normal and correct operation of the test method, exceed the following values only in one case in twenty:

7.7 %

11.2 Precision was determined in round-robin testing among seven laboratories on two samples having an initial gloss between 72 and 90 and a gloss retention greater than 95 %. These precision values may not apply to materials with lower gloss and gloss retention.

11.3 The procedure in this test method has no bias because the value of gloss retention can be defined only in terms of a test method.

## 12. Keywords

12.1 gloss retention; paperboard; waxed paper