Designation: D 3959 – 91 (Reapproved 2001)

Standard Test Method for Rubber- and Plastic-Coated Fabrics—Discoloration Sensitivity to Tobacco Smoke[1]

This standard is issued under the fixed designation D 3959; 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 describes a procedure to visually evaluate the discoloration sensitivity of a coated fabric due to cigarette smoke and the fabric's ability to be cleaned.

1.2 The values stated in SI units are to be regarded as the standard.

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. Significance and Use

2.1 Tobacco smoke may form a film and discolor rubber- and plastic-coated fabrics, affecting their ability to be cleaned.

2.2 This test method is quite suitable for comparing several kinds of coated fabrics for their discoloration by smoke.

3. Apparatus and Materials

3.1 *Smoking Apparatus*—A modified desiccator (remove drying agent), approximately 250 mm in diameter with a perforated porcelain plate (*A*).

NOTE 1—All of the apparatus referenced by letters (*A, B, C,* etc.) pertain to Fig. 1.

3.2 *Metal Cigarette Holder (B).*

3.3 *Glass Tube*, extending almost to the bottom of the smoking apparatus with stopcock (*C*) connected with a water jet vacuum pump by means of a Woulff bottle.

3.4 *Drop Collector (D)* under the cigarette tube (*B*).

3.5 *Masking Tape* approximately 10 mm wide.

3.6 *Sponge* suitable for use with ethanol (95 %).

3.7 *Ethanol* (95 %).

3.8 *Desiccator* with chalk as drying agent.

3.9 *Cigarettes* approximately 85 mm long without filter, dried 16 h in the desiccator.

4. Test Specimens

4.1 Cut three 25 by 60-mm specimens of equal color and design from the coated fabric sample to be tested.

4.2 Place the specimens on a glass plate that fits the bottom of the smoking apparatus and wipe them with a sponge wetted with ethanol for 30 s.

4.3 Rinse the test specimens thoroughly with water. Avoid touching the coating with the fingers. Let the coating of the test specimens dry at room temperature.

4.4 Fasten two of the test specimens to the glass plate with masking tape. Save the third specimen for comparison.

5. Procedure

5.1 Place the glass plate with the test specimens attached on the bottom plate of the smoking apparatus (*A*) and close. Put a cigarette in the holder (*B*) so that a length of 60 mm is exposed and start the vacuum pump. Tighten the cigarette and adjust the suction so that the cigarette burns completely in 1 min ± 10 s. Close the stopcock (*C*) as the fire reaches the metal tube (*B*). Allow the smoking apparatus to stand for 1 h to give the smoke components the opportunity to deposit on the coated fabric.

5.2 Repeat 5.1 four times. Allow the smoke to remain in the smoking apparatus for 24 h.

5.3 Remove the test specimens from the smoking apparatus and clean one specimen as follows:

5.3.1 Wipe with sponge wetted with ethanol.

5.3.2 Allow 10 min of wetting with ethanol.

5.3.3 Repeat the wiping.

5.3.4 Rinse thoroughly with water.

5.3.5 Blot lightly with filter paper and allow to dry at room temperature.

5.4 Compare the smoke coated, the smoke coated but cleaned, and the untested control test specimens for discoloration differences. The intensity of discoloration to the untested control shall be designated as:

5.4.1 No discoloration.

5.4.2 Slight discoloration.

5.4.3 Medium discoloration.

5.4.4 Heavy discoloration.

5.4.5 Very heavy discoloration.

[1] This test method is under the jurisdiction of ASTM Committee D11 on Rubber and is the direct responsibility of Subcommittee D11.37 on Coated Fabrics and Rubber Thread.

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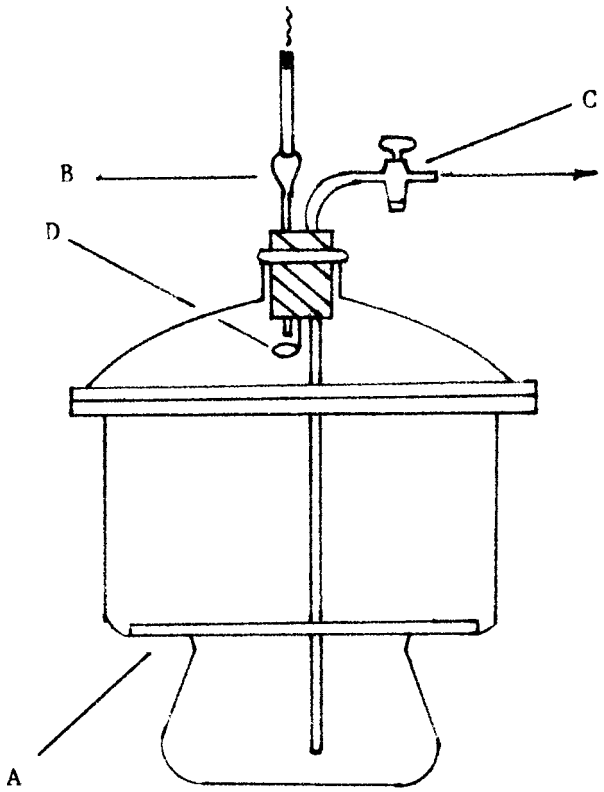

A—Glass plate with attached specimens
B—Metal cigarette holder
C—Stopcock
D—Drop collector

FIG. 1 Apparatus for Evaluating the Discoloration Sensitivity of Coated Fabric

6. Report

6.1 Report the following information:

6.1.1 Description of material tested,

6.1.2 Description of smoked coated test specimens before and after cleaning as outlined in 5.4, and

6.1.3 Date of test.

7. Precision and Bias

7.1 Precision and bias data for this test method cannot be obtained. This test method does not produce quantitative data. It is a qualitative test.

8. Keywords

8.1 coated fabrics; discoloration; tobacco smoke