



Designation: F119 – 82(Reapproved 2008)

# Standard Test Method for Rate of Grease Penetration of Flexible Barrier Materials (Rapid Method)<sup>1</sup>

This standard is issued under the fixed designation F119; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the Department of Defense.*

## 1. Scope

1.1 This test method provides standard conditions for determining the rate of grease penetration of flexible barrier materials. Pinholes, which can be measured by a separate test, will increase the rate of grease penetration as determined by this test method.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address the safety concerns 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:*<sup>2</sup>

**D374 Test Methods for Thickness of Solid Electrical Insulation**

**D618 Practice for Conditioning Plastics for Testing**

**D1898 Practice for Sampling of Plastics** (Withdrawn 1998)<sup>3</sup>

2.2 *TAPPI Standard:*

**TAPPI T465 sm-52 Creasing of Paper for Water Vapor Permeability Tests**<sup>4</sup>

## 3. Summary of Test Method

3.1 Flexible barrier materials, uncreased or creased by a standard procedure, are exposed on one side to grease con-

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee F02 on Flexible Barrier Packaging and is the direct responsibility of Subcommittee F02.10 on Permeation.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The last approved version of this historical standard is referenced on www.astm.org.

<sup>4</sup> Available from Technical Association of the Pulp and Paper Industry (TAPPI), 15 Technology Parkway South, Norcross, GA 30092, http://www.tappi.org.

tained in a weighted cotton patch. The time required to show a visual change caused by wetting (reduction in light scattering) of a ground-glass back-up plate is measured.

## 4. Significance and Use

4.1 This test method is valuable in the development and selection of flexible barrier materials suited for use as grease barriers.

4.2 The test is rapid in comparison with other methods because of the extremely small quantity of oil required for detection (about 6  $\mu\text{g}$ ). The actual time to failure is a multiple of the values obtained by this test method. When permeation is through an absorbent structure such as kraft paper coated with polyethylene, the failure times will be longer and variable, depending on the variation in porosity and thickness of the structure.

## 5. Apparatus

5.1 *Backing Plates*, ground-glass, 50 by 50 by 3-mm (2 by 2 by 1/8-in.), very fine grind on one side only.

NOTE 1—The ground-glass backing plates may be prepared from 2 by 2-in. squares of 1/8-in. plate glass by lightly grinding the surface with a silicon carbide abrasive as follows: Place a piece of plate glass approximately 1ft square on a flat surface. Mix some abrasive and water in small quantities to make a fairly uniform paste. Place one of the 2-in. squares of plate glass face down in the abrasive paste, and rotate it in a figure eight movement with the finger tips using the slightest amount of pressure. When the paste gets too heavy, remove the plate glass square from the bed and wash it to remove all traces of abrasive. Add more water to the thick abrasive paste on the bed. (If necessary, add small amounts of abrasive.) Continue the process until a uniform and light overall etch is present on the face of the square. When a uniform etch has been obtained, wash the square thoroughly to remove all traces of abrasive and pat dry with lens tissue.

5.2 *Weights*, 50-g, 20 mm (0.75 in.) in diameter at the base.

5.3 *Patches*, rifle cleaning, cotton flannel.

5.4 *Medicine dropper*.

5.5 *Forced-Circulation Oven*, designed to maintain a test temperature of 40 or 60°C within  $\pm 1^\circ\text{C}$ .