



Standard Test Methods for Mildew (Fungus) Resistance of Paper and Paperboard¹

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1. Scope

1.1 These test methods cover the qualitative determination of mildew (fungus) resistance of paper and paperboard, particularly those types which have been given a fungus resistant treatment.

1.2 The two test methods appear in the following order:

	Sections
Method A—Direct Inoculation, Pure Culture, Nonsterile Specimen	6 to 12
Method B—Soil Burial	13 to 17

1.3 The direct inoculation, pure culture, nonsterile specimen method is applicable to paper products that are expected to be used or stored in a damp, warm atmosphere, but out of contact with damp soil and is the preferred method. The soil burial method may be useful, and is recommended, for papers, with or without fungus resistant treatment, which may be in contact with damp soil for long periods of time.

1.4 *This standard does not purport to address all of the safety problems, 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 828 Test Method for Tensile Breaking Strength of Paper and Paperboard²
- D 1193 Specification for Reagent Water³
- D 1968 Terminology Relating to Paper²

3. Terminology

3.1 *Definitions*—Definitions shall be in accordance with Terminology D 1968 and the *Dictionary of Paper*.⁴

4. Significance and Use

4.1 Paper products used or stored in damp warm atmo-

spheres or in contact with damp soil are subject to attack by fungus and other microorganisms. These test methods cover procedures for evaluating the degree of resistance to attack and for evaluating the degree and permanency of protection to attack by paper treatments.

5. Sampling

5.1 Obtain a sample of the paper to be evaluated in accordance with Practice D 585.

METHOD A—DIRECT INOCULATION, PURE CULTURE, NONSTERILE SPECIMEN

6. Apparatus

6.1 *Autoclave*, capable of being operated at a pressure of 15 psi (103 kPa) steam pressure and an exhaust temperature of 121°C (250°F), for sterilization of media.

6.2 *Bottles for Inoculum*—Several 250-mL, narrow-mouthed, square-sectional glass bottles fitted with screw caps are used for water blanks. Standard milk-dilution bottles scribed at the 99-mL level are recommended. The blanks are prepared by adding to each bottle approximately 13 mm of glass beads, 100 mL of water, and three or four drops of suitable wetting agent. The water blanks are then ready for sterilizations.

6.3 *Plugs*, nonabsorbent cotton or other suitable closures.

6.4 *Flaming Equipment*—Depending upon the circumstances, an alcohol lamp or a Bunsen burner may be used to flame the inoculating needle and the mouths of sterile containers.

6.5 *Containers*—Erlenmeyer flasks, 250 mL, or bottles are convenient containers for sterile media.

6.6 *Oven*, capable of maintaining a temperature of 165°C.

6.7 *Incubator*, capable of maintaining a temperature of 28 ± 1°C to provide proper incubation of the inoculum and for the inoculated specimens.

6.8 *Inoculating Needle*—A standard inoculating needle fitted with either 22- or 24-gage Nichrome wire.

6.9 *Test Tubes*—18 by 150-mm rimless bacteriological test tubes are used for growing the test organisms.

6.10 *Petri Dishes*, disposable, 100 by 15 mm are recommended.

6.11 *Pipets*—Graduated 5- or 10 mL Mohr pipets, with the tips cut off and fire-polished to give an opening about 3 mm in diameter at the delivery end, are best for pipetting the spore-mycelial inoculum and for measuring the volume of culture

¹ These test methods are under the jurisdiction of ASTM Committee D-6 on Paper and Paper Products and are the direct responsibility of Subcommittee D06.92 on Test Methods.

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

³ *Annual Book of ASTM Standards*, Vol 11.01.

⁴ Formerly published by American Paper & Pulp Assoc. (API), New York, NY (4th ed., 1980).