



Standard Test Method for Blocking and Picking Points of Petroleum Wax¹

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This test method was prepared jointly by the Technical Association of the Pulp and Paper Industry and the American Society for Testing and Materials.

^{ε1} NOTE—Section 14 was added editorially in June 1995.

1. Scope

1.1 This test method covers the determination of the blocking point and picking point of petroleum wax.

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.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 87 Test Method for Melting Point of Petroleum Wax (Cooling Curve)²

D 2423 Test Method for Surface Wax on Waxed Paper or Paperboard²

E 1 Specification for ASTM Thermometers³

3. Terminology

3.1 *Definitions:*

3.1.1 *wax blocking point*—the lowest temperature at which film disruption occurs across 50 % of the waxed paper surface when the test strips are separated.

3.1.2 *wax picking point*—the temperature at which the first film disruption occurs on the waxed paper when test strips are separated.

4. Summary of Test Method

4.1 Paper test specimens are coated with the wax sample, folded with the waxed surfaces together, and placed on a blocking plate. The plate is heated at one end and cooled at the other end to impose a measured temperature gradient along its length. After a conditioning period on the plate, the specimens are removed, unfolded, and examined. The points of initial film disruption (picking point) and where 50 % of the specimen

width is disrupted (50 % blocking point) are noted. The temperatures of corresponding points on the blocking plate are reported as the picking point and blocking point or blocking range.

5. Significance and Use

5.1 Blocking of waxed paper, because of the relatively low temperatures at which it may occur, can be a major problem to the paper-coating industry. For example, when the waxed surfaces in a roll of waxed paper stick together, upon separation the surface films are marred and the glossy finish is destroyed. The wax picking point and the wax blocking point indicate an approximate temperature range at or above which waxed surfaces in contact with each other are likely to cause surface film injury.

6. Apparatus

6.1 *Wax Coating Device*—Any manual- or machine-driven waxer that gives uniform coatings of the desired weights to a strip of paper not less than 51 mm (2 in.) wide.

6.2 *Trimming Board*, or other device for cutting paper strips.

6.3 *Paper Scales*, sensitive to 0.002 g, or suitable balance for measuring basis weights of unwaxed and waxed paper.

6.4 *Blocking Plate Assembly*, consisting of a metal plate 305 mm (12 in.) wide, 13 to 51 mm ($\frac{1}{2}$ to 2 in.) thick, and 559 to 914 mm (22 to 36 in.) long. It is heated at one end and cooled at the other end to provide a 457 to 762-mm (18 to 30-in.) test section having an average temperature gradient of 0.8 to 2.2°C (1.5 to 4.0°F)/in. The temperature gradient across the width of the plate from the longitudinal axis to 25 mm (1 in.) from the edge must not exceed 0.3°C (0.5°F). The temperature at any point should not vary more than 0.3°C (0.5°F). Details of two acceptable blocking plates are given in Fig. 1 and Fig. 2.

6.4.1 *Eight Foam Rubber Strips*, 25 to 38 mm (1 to 1½ in.) wide by 6 to 13 mm ($\frac{1}{4}$ to $\frac{1}{2}$ in.) thick, extending the length of the test section on the blocking plate.

6.4.2 *Eight Sets of Steel Weights*, 25 by 25 mm (1 by 1 in.) in cross section made from stock having a density range from 7800 to 8000 kg/m³ (0.28 to 0.29 lb/in³). The weights may be in single lengths or in sections to give sets equaling the length of the test section of the blocking plate.

6.5 *Temperature Recorder*, or indicator for measuring the temperature gradient of the blocking plate. The instrument and

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

³ *Annual Book of ASTM Standards*, Vol 14.03.

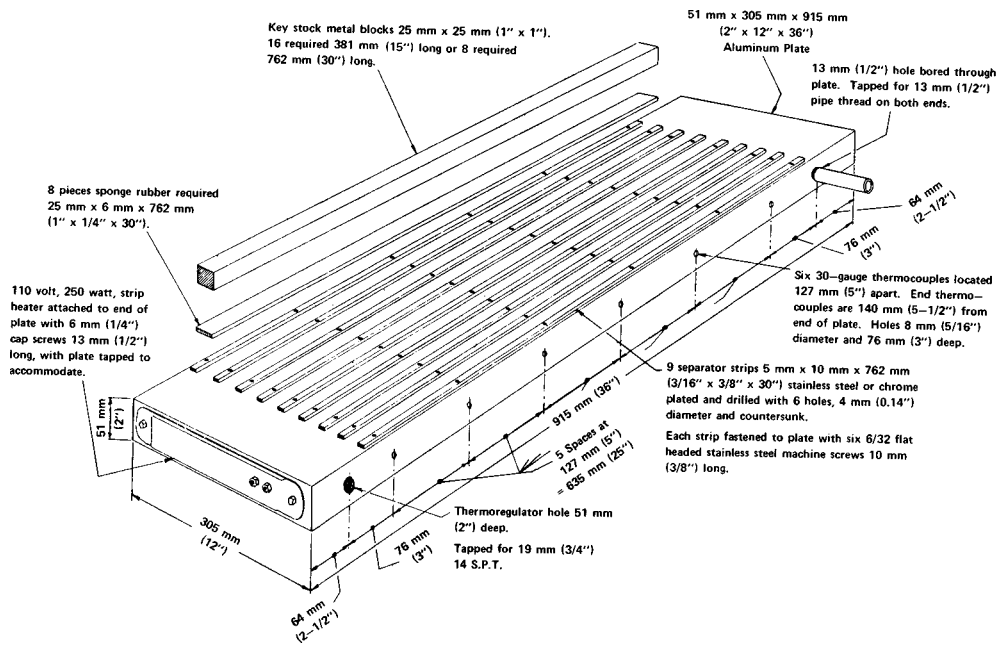


FIG. 1 Type A Blocking Plate

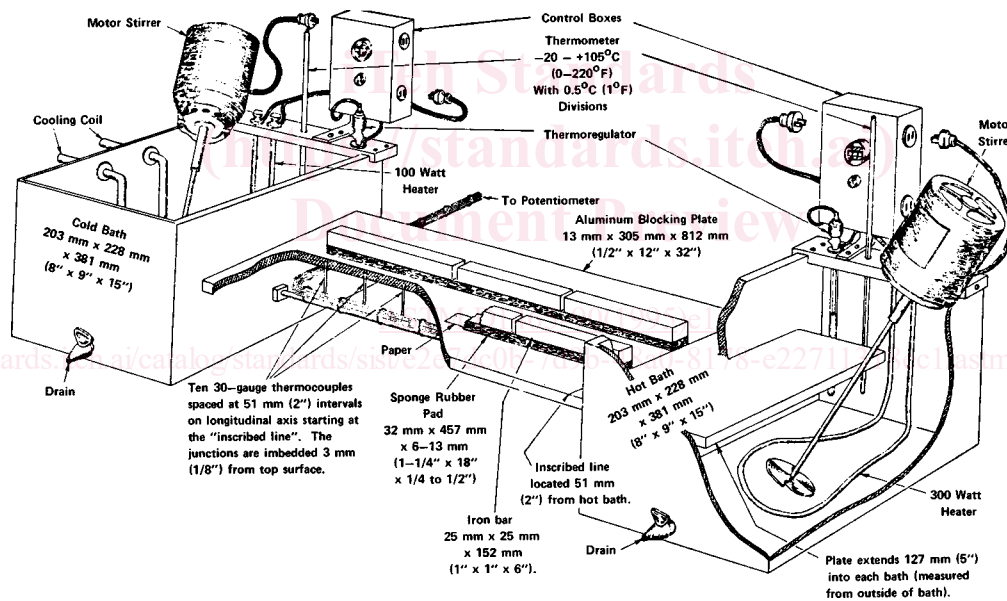


FIG. 2 Type B Blocking Plate

thermocouples when calibrated shall consistently be accurate to $\pm 0.3^{\circ}\text{C}$ (0.5°F).

6.6 *Thermometers*—For water bath and wax bath on the waxing device, use two ASTM Tag Closed Tester Thermometers having a range from -5 to 110°C (20 to 230°F), graduated in 1°F subdivisions, and conforming to Thermometer 9C or 9F as prescribed in Specification E 1.

7. Test Paper

7.1 *Paper*—Cereal glassine of basis weight 46 to 51 g/m² (28.5 to 31.5 lb/3000 ft²).

8. Sampling

8.1 Select a portion of the wax that is representative of the whole sample. The amount required will depend on the size of

the waxing device used.

9. Standardization of Apparatus

9.1 Turn the blocking plate on with all sponge rubber strips and metal blocks in position. Allow sufficient time (3 h minimum) for the plate to reach an equilibrium temperature condition.

9.2 Calibrate a 30-gage "test" thermocouple as follows: Heat a beaker of water to about 43.3°C (110°F) and measure its temperature with a standardized thermometer which is accurate to 0.3°C (0.5°F). Insert the "test" thermocouple in the water and measure the temperature with a manual potentiometer which is accurate to at least $\pm 0.5^{\circ}\text{C}$ ($\pm 1^{\circ}\text{F}$). A portable precision type potentiometer or a type *K* potentiometer, both of