



Standard Test Method for Hydrogen Ion Concentration of Dry Adhesive Films¹

This standard is issued under the fixed designation D 1583; 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.

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

1. Scope

1.1 This test method covers determination of the hydrogen ion concentration (pH), acidity, or alkalinity, of organic adhesives in the cured dry film form. This test method is not designed to apply to pressure-sensitive adhesives.

1.2 The values stated in SI units are to be regarded as the standard. The values given 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 907 Terminology of Adhesives²

E 70 Test Method for pH of Aqueous Solutions With the Glass Electrode³

3. Terminology

3.1 *Definitions*—Many of the terms in this test method are defined in Terminology D 907.

4. Summary of Test Method

4.1 Collect samples of the adhesive to be tested with any hardener necessary.

4.2 Dry adhesive films are prepared.

4.3 The adhesive films are ground and mixed with distilled water.

4.4 The pH is determined using a pH meter in accordance with Test Method E 70.

5. Significance and Use

5.1 The pH of an adhesive may be a factor whereby the adherends or the adhesive itself may be adversely affected in time by the acidity or alkalinity.

6. Apparatus

6.1 *pH Meter*, capable of making measurements to ± 0.05 pH.

6.2 *Glass Vial*, capable of properly immersing the electrode of the pH meter when filled with the specified test solution.

6.3 *Distilled Water*, with a pH between 5.6 and 7.0 at $23 \pm 1^\circ\text{C}$ ($73.4 \pm 1.8^\circ\text{F}$).

6.4 *Glass Sheet*, free from scratches, approximately 200 by 250 mm (8 by 10 in.) in size for use in oven.

6.5 *Circulating-Air Oven*, capable of maintaining temperatures of $23 \pm 1^\circ\text{C}$ ($73.4 \pm 1.8^\circ\text{F}$) to $150 \pm 1^\circ\text{C}$ ($302 \pm 1.8^\circ\text{F}$).

7. Sampling

7.1 Except in special cases, take a composite sample when possible from three or more separate containers, chosen at random. Also take samples from containers which appear to be nonrepresentative, and test such samples separately. Place the samples immediately in airtight glass containers filled to prevent excessive air space above the adhesive and transport them to the testing laboratory in these containers. Take precautions to reduce evaporation or drying to a minimum. Thoroughly mix the adhesive in the container if there is a tendency for the materials to separate before a sample is taken. Use the required catalysts and hardeners from the same shipment as the other adhesive components if the components are furnished as a unit by the adhesive manufacturer.

8. Test Specimens

8.1 *Room-Temperature Setting Adhesives*—Use adhesives that form dry films at room temperature and mix in accordance with the recommendations of the adhesive manufacturer. Spread the adhesive on glass or other inert material to which the adhesive does not adhere to a film thickness of less than 0.51 mm (0.020 in.) and allow it to dry at $23 \pm 1^\circ\text{C}$ ($73.4 \pm 1.8^\circ\text{F}$).

8.2 *Elevated-Temperature Setting Adhesives*—Mix adhesives that require heat to form a dry film in accordance with the recommendations of the manufacturer. Prepare a film of the adhesive on glass or other inert material to which the adhesive does not adhere, and cure it in accordance with the recommendations of the manufacturer. The adhesive film should be less than 0.51 mm (0.020 in.) in thickness. In the absence of specific recommendations for curing the adhesive, place the films on the glass plates in a circulating-air oven at $66 \pm 1^\circ\text{C}$.

¹ This test method is under the jurisdiction of ASTM Committee D14 on Adhesives and is the direct responsibility of Subcommittee D14.30 on Wood Adhesives.

Current edition approved March 10, 2001. Published May 2001. Originally published as D 1583 – 58. Last previous edition D 1583 – 00.

² *Annual Book of ASTM Standards*, Vol 15.06.

³ *Annual Book of ASTM Standards*, Vol 15.05.