



Standard Test Methods for Hydrogen Ion Concentration (pH) of Paper Extracts (Hot- Extraction and Cold-Extraction Procedures)¹

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1. Scope

1.1 These test methods cover two procedures for determination of the hydrogen ion concentration, expressed in terms of pH, of an aqueous extract of paper.

1.2 These test methods may be applied to writing, printing, and sized industrial papers.

1.3 These test methods are not intended to be used for determination of pH of insulating papers, for that see Methods D 202.

1.4 The test methods appear as follows:

	Section
Test Method A—pH of Paper (Unfiltered Extract) After Extraction for 1 h in Cold (25 ± 5°C) Water	11.1
Test Method B—pH of Paper (Unfiltered Extract) After Extraction for 1 h in Boiling Water	11.2

1.5 Specifications may be based on Test Method A or Test Method B, or both.

1.6 Where a specification or specific instructions or agreement to use only one of these test methods is absent, determine pH using both procedures, and interpret results based on Section 12.

1.7 *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 202 Test Methods of Sampling and Testing Untreated Paper Used for Electrical Insulation²

D 585 Practice for Sampling and Accepting a Single Lot of Paper, Paperboard, Fiberboard and Related Products³

D 1193 Specification for Reagent Water⁴

D 1293 Test Methods for pH of Water⁴

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 10.01.

³ *Annual Book of ASTM Standards*, Vol 15.09.

⁴ *Annual Book of ASTM Standards*, Vol 11.01.

D 1968 Terminology Relating to Paper and Paper Products³

E 70 Test Method for pH of Aqueous Solutions With the Glass Electrode⁵

E 122 Practice for Choice of Sample Size to Estimate a Measure of Quality for a Lot or Process⁶

3. Terminology

3.1 *Definition:* Definitions shall be in accordance with Terminology D 1968 and the *Dictionary of Paper*.⁷

4. Summary of Test Methods

4.1 Test Method A consists of the extraction of a 1-g test specimen in 70 mL of cold distilled water (25 ± 5°C) for 1 h, and determination of pH without filtration using a commercial pH meter.

4.2 Test Method B consists of the extraction of a 1-g test specimen in 70 mL of boiling distilled water for 1 h, followed by cooling of the extract and determination of the pH without filtration using a commercial pH meter.

5. Significance and Use

5.1 The acidity or alkalinity of a paper sample extract is important because of the effect of paper acidity or paper alkalinity on the permanence of the paper. Although acidity or alkalinity may be determined by titration the pH is often more indicative of the stability of paper than is the total acidity or alkalinity.

6. Apparatus

6.1 *pH Meter*—Use a pH meter of Type II or Type III as specified in Test Method D 1293. In general terms this is a pH meter accurate to 0.01 pH units with temperature compensation suitable for making pH measurements over the 0 to 14-pH range.

6.2 Reflux condensers, preferably water cooled, West or Allihn Type, with 300-mm jackets, standard taper inner joints and drip tips; or air condensers, 10-mm diameter and 1000 mm long with ST inner joints and drip tips, ST joints to fit the flasks

⁵ *Annual Book of ASTM Standards*, Vol 15.05.

⁶ *Annual Book of ASTM Standards*, Vol 14.02.

⁷ Available from the Technical Association of the Pulp and Paper Industry, P.O. Box 105113, Atlanta, GA 30348.