



Standard Test Method for pH of Leather¹

This standard is issued under the fixed designation D 2810; 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.

1. Scope

1.1 This test method covers the determination of the pH of all types of leather. This method does not apply to wet blue.

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. Terminology

2.1 *Definition of Term Specific to this Standard:*

2.1.1 The pH of a solution has been defined as the negative logarithm of the hydrogen ion activity. A solution of pH 7 is neutral at 24°C. Lower numbers indicate increasing acidity; higher numbers, increasing alkalinity.

3. Significance and Use

3.1 This test method is designed to measure the pH of a distilled-water extract of leather. This is considered to be a measure of the acidity or alkalinity of the leather. Excessive acidity or alkalinity may have a deleterious effect on the aging characteristics of leather.

3.2 This test method is suitable for development, control, and service evaluation of leather.

4. Interferences

4.1 If the leather contains an excessive amount of fats or greases or has been treated with a material to obtain water repellency, the wettability and consequently the extractability may be affected.

4.2 If the specimen is difficult or impossible to wet, it may be treated by any of the following procedures:

4.2.1 A vacuum may be used to effect wetting.

4.2.2 Mix with the required amount of water for 1 min in a disintegrator.²

4.2.3 Extract the weighed specimen with a fat solvent in a Soxhlet apparatus for 5 h. Allow the specimen to air until all solvent has evaporated; then proceed as outlined in Section 9.

5. Apparatus

5.1 *Electrometric pH Meter*, either battery or line-operated, with a glass electrode and calomel reference electrode. The meter shall have a maximum scale division of 0.1 pH unit, and shall have an accuracy of at least 0.1 pH unit and reproducibility of 0.05 pH unit.

NOTE 1—Sellers list reasonably priced models having an accuracy of ± 0.05 , sensitive to 0.02 and with reproducibility to 0.02 pH units.

5.2 *Analytical Balance*, sensitive to 0.01 g.

6. Reagents

6.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.³ Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

6.2 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean distilled water or water of equal purity. Distilled water shall have a pH value of not less than 5.5 nor more than 7.0 and shall give a residue of not more than 0.5 mg, when 100 mL is evaporated and dried in a platinum dish.

6.3 *Standard pH Solutions*:⁴

6.3.1 *Alkaline Phosphate Buffer Solution (0.01 M trisodium phosphate, pH = 11.72 at 25°C)*—Dissolve 1.42 g of anhydrous disodium hydrogen phosphate (Na_2HPO_4) in 100 mL of a 0.1 N carbonate-free solution of sodium hydroxide (NaOH) and dilute to 1 L with water.

6.3.2 *Borax Buffer Solution (0.01 M, pH = 9.18 at 25°C)*—Dissolve 3.81 g of sodium tetraborate decahydrate ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10 \text{ H}_2\text{O}$) in water and dilute to 1 L.

6.3.3 *Hydrochloric Acid (pH = 1.10 at 25°C)*—Add 2 g of concentrated hydrochloric acid (HCl, sp gr 1.19) to 450 g of

¹ This test method is under the jurisdiction of ASTM Committee D-31 on Leather and is the direct responsibility of Subcommittee D31.06.01 on General Methods. This test method was developed in cooperation with the American Leather Chemists Assn. (Standard Method B 20 – 1969).

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² A Waring Blender has been found satisfactory.

³ *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmaceutical Convention, Inc. (USPC), Rockville, MD.

⁴ Buffer salts and solutions prepared in accordance with National Bureau of Standards recommendations are sold by reputable laboratory supply houses and may be used.