



Designation: D8294 – 21

Standard Practice for Estimating pH to Verify Status of Aqueous Samples¹

This standard is issued under the fixed designation D8294; 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 practice provides information on verifying the pH of aqueous samples before analysis. This practice is not intended to be used for non-aqueous samples like oil or grease.

1.2 This practice may also be used in adjusting pH of samples during various analytical steps.

1.3 Wide-range pH papers/strips are used for a rapid indication of pH to within about 1 pH unit, and narrow-range pH papers/strips are used to indicate pH within about 0.5 pH units.

1.4 In some instances, a universal liquid indicator may be used.

1.5 *Units*—The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.6 This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM International standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word “Standard” in the title means only that the document has been approved through the ASTM consensus process.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.8 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards*:²

D1293 Test Methods for pH of Water

3. Terminology

3.1 *Definitions*:

3.1.1 *pH paper, n*—pieces of paper usually supplied as small rolls that change color depending on the pH.

3.1.1.1 *Discussion*—pH paper is an inexpensive, robust, and relatively accurate way of estimating the pH of an aqueous liquid. A strip of filter paper is soaked with different pH indicators, or a mixture of indicators (universal indicator), and allowed to dry. Touching solution to the paper or dipping the paper in an aliquot of solution causes the color of the indicator on the paper to change according to the pH. The color and relative intensity of the color is compared to a chart from which pH is estimated. Using only one indicator per paper enables a better estimate of a narrow pH range.

3.1.2 *pH paper/strip, n*—throughout this practice, the term is used as a reference to both, pH paper and pH strip.

3.1.3 *pH strips, n*—strips of plastic with one or more squares or rectangles of pH paper fastened to one end.

3.1.3.1 *Discussion*—pH strips are more rugged than pH paper. They consist of one or more (usually up to four) small squares or rectangles of pH paper attached to one end that are dipped into an aliquot of the sample. In contrast to indicator papers described in 3.1.1, pH strips typically have the indicator chemically bound or fixed to the paper to prevent it from leaching into the sample. However, products that contain impregnated filter papers on test strips are also available and these may release indicator into the sample. When necessary, the type can be checked by putting a test strip “face down” on absorbent paper. Each square features a different pH indicator resulting in different colors and intensity in relation to the pH. The color and intensity of each square is compared to a chart from which pH is estimated. The different indicators/colors of each square provide users with greater confidence in their estimation of the pH.

¹ This practice is under the jurisdiction of ASTM Committee D19 on Water and is the direct responsibility of Subcommittee D19.05 on Inorganic Constituents in Water.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.