

DESCRIPTION

SteriChek Bicarb pH Reagent Strips provide a convenient and accurate means of measuring the pH of bicarbonate concentrates and solutions of bicarbonate and acid.

The pH value is a measure of acidity or alkalinity of water. A pH of 7.0 is neutral; that is, there are neither hydrogen ions (no acidity) nor hydroxyl ions (no alkalinity) present¹. At pH of less than 7.0 there are hydrogen ions present (the solution is acidic). At pH greater than 7.0 there are hydroxyl ions present (the solution is alkaline).

Bicarbonate solutions are usually kept in a closed system or tightly covered container. If the bicarbonate solution is left open to the air, carbon dioxide gas begins to escape. The loss of carbon dioxide leads to an increase in alkalinity (pH) of the solution. To get an accurate measurement of pH of the closed system, the sample should be measured right away.

SteriChek Bicarb pH Reagent Strips indicate the pH at an immediate read time for samples warmed to temperatures of 32 to 40°C (90–104°F). Samples at room temperature, 20–25°C (68–77°F), can be read between 10 and 15 seconds. Comparing the color of the pad to the color chart on the bottle label provides the estimate of the pH.

⚠ WARNING

- Do not use SteriChek Bicarb pH Reagent Strips to test treated or untreated water or to test acetate dialysate.
- Keep all unused strips in the original bottle. Do not remove desiccant pack. Replace cap immediately and tightly after removing a strip; the strips must be protected from heat and humidity.
- Do not touch the reagent pad area. Do not allow the pad to come in contact with liquids or with work surfaces, as these may be contaminated with potentially interfering substances.

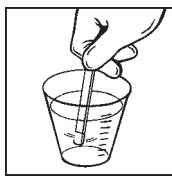
⚠ IMPORTANT

Always compare test results to the color chart on the SteriChek bottle for proper interpretation.

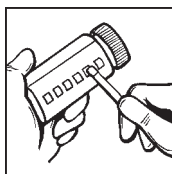
DIRECTIONS

Use care in collecting the sample. Agitation of the sample will accelerate the loss of carbon dioxide and cause an increase in pH.

1. Dip pad in sample solution for one second.



2. Remove and read immediately if testing a sample warmed to 32°–40°C. (Read at 10 seconds if testing a room temperature sample, 20°–25°C.)
3. Interpret the results by comparing the pad to the appropriate color chart.



For Quality Control:

Each facility should determine its own quality control procedure. Regular use of Quality Control procedures will increase user proficiency, and will provide the user with a warning of a possible test strip error, potential use of outdated strips, or of improperly stored or handled strips.

Buffer with a pH value of pH 8.0 from Hach Company may be used as a control solution. The buffer is available as convenient unit dose powder pillows: Hach Company Catalog No. 14079–95, package of 15 foil packs (powder pillows).

1. Open the powder pillow and add the contents to 50 ml of deionized water (room temperature).
2. Pour a portion of the control solution into a sample cup.
3. Dip the SteriChek Bicarb pH Reagent Strip into the control solution for 1 second and remove.
4. Compare test pad to color chart 10 seconds after removing from sample. The solution should yield a reagent strip value of pH 8.0 ± 0.5.

STORAGE

SteriChek Bicarb pH Reagent Strips must be kept in the original bottle with the lid tightly closed to obtain the best results. Do not remove the desiccant pack. Store at temperatures between 60 and 90°F (16–32°C). Use within 6 months after first opening bottle. Record the date opened. Do not use the test strips (from an opened or unopened bottle) after the expiration date.

RESULTS

Color development of the SteriChek Bicarb pH Reagent Strips is more intense in concentrated bicarbonate solutions than in bicarbonate/acid solutions. Therefore two sets of color blocks have been developed.

The pH value of the bicarbonate/acid solution is obtained by comparing the color developed on the pad to the appropriate color blocks on the bottle label. The bicarbonate/acid color blocks are labeled with pH values of 6.5, 7.0, 7.5, 8.0, and 8.5.

The pH value of the concentrated bicarbonate solution is obtained by comparing the color developed on the test pad to the set of color blocks labeled with pH values of 7.5, 8.0 and 8.5 on the bottle label.

For accurate results with room temperature (20–25°C) samples compare the pad and color blocks at 10 seconds after dipping in the sample. With warm temperatures (32–40°C), compare immediately after dipping.

CHEMICAL PROPERTIES OF THE TEST

The test is based on the color change of the pH indicators cresol red and phenol red present in the pad. The color of the pad is dependent on the pH of the sample:

- At pH 6.5 → yellow/orange (acidic solution)
- At pH 7.0 → orange (neutral solution)
- At pH 7.5, 8.0, and 8.5 → red orange, red and red/magenta (alkaline solutions)

PERFORMANCE CHARACTERISTICS

Performance characteristics of the SteriChek Bicarb pH Reagent Strips are based on analytical studies using acid/bicarbonate solutions and concentrated bicarbonate solutions. Acid/bicarbonate solutions were prepared through adjustment of acidic and basic components to give discrete pH levels. Concentrated bicarbonate solutions were prepared through progressive conversion of the sodium bicarbonate to its carbonate form by aging. A pH electrode method with calibration based on NIST traceable buffer solutions² was used to determine the reference pH values.

In 314 of 314 observations at five pH levels of acid/bicarbonate solutions and in 30 observations at two pH levels of bicarbonate concentrate, eleven different readers correctly read the solution pH values to within + or – 0.5 pH of the expected value.

Accuracy of the Reagent Strip result depends upon several factors including:

- temperature of sample
- timing error during strip interpretation of pH
- variability in color perceptions
- sample handling technique
- lighting conditions

Performing the color match under cool white fluorescent lighting will produce the most accurate results. Incandescent lighting may also be used.

The color development of the strip will continue; therefore it is important to read the strip immediately after dipping for 1 second if testing samples that have been warmed to 32–40°C. If testing samples at room temperature, read the strip 10 seconds after dipping for 1 second.

LIMITATIONS

The color generated in the indicator pad will indicate the pH of the solution absorbed in the matrix. Carbon dioxide will gradually dissipate from the indicator pad and the pH of the absorbed solution and corresponding color intensity will increase with time.

If the bicarbonate solution is shaken, agitated during dispensing, or allowed to stand prior to testing, the pH will increase as carbon dioxide is dissipated.

SteriChek Bicarb pH Reagent Strips are not suitable for use in unbuffered solutions, that is, in water or very dilute solutions. Inaccurate measurements may occur with use in solutions containing bicarbonate concentrations that are diluted below the target values for Hemodialysis, e.g. less than 28 mEq/l.

Use of the reagent strips in solutions containing chlorine concentrations of 5 ppm (mg/l) or greater may produce inaccurate measurements.

AVAILABILITY

Product Code 811916 SteriChek Bicarb pH Reagent Strips includes five bottles of 100 reagent strips, 10 reaction cups and a multilingual product manual. Also enclosed for your use are color-coded stickers that correspond to the color of the bottle label and kit box label. These stickers may be applied on the top of each bottle for easy product identification. Each sticker includes a space to record the date the bottle is opened.

These SteriChek testing products are also available from your distributor:

811900	Residual Chlorine Reagent Strips
811902	0.1 ppm Total Chlorine DPD Kit
811903	0.1 ppm Total Chlorine DPD Refill Kit
811905	Residual Peroxide Reagent Strips
811906	Peracetic Acid Reagent Strips
811911	Sensitive 5 ppm Low-Range Hardness Strips
811912	Chlorine Control Tablets
811913	Residual Peroxide Control Tablets
812014	Blood Leak Reagent Strips

MADE IN THE U.S.A. OF US AND IMPORTED CONTENT.

¹ I. M. Arduino and M. Favero, Microbiologic Aspects of Hemodialysis, AAMI Standards and Recommended Practices—Dialysis 2001, p. 272.
² Buffers certified to NIST Standard Reference Materials: pH 7.00, Catalog No. 910107 and pH 10.01, Catalog No. 910110 from Orion Research Inc.

REFERENCES

HACH® STERICHEK® BICARB pH REAGENT STRIPS

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