

Instruction Manual

HI 38014 Total Alkalinity Test Kit

HANNA
instruments

www.hannainst.com

Dear Customer,

Thank you for choosing a Hanna Product.

Please read the instruction sheet carefully before using the test kit. It will provide you with the necessary information for correct use of the kit. If you need additional information, do not hesitate to e-mail us at tech@hannainst.com.

Remove the chemical test kit from the packing material and examine it carefully to make sure that no damage has occurred during shipping. If there is any noticeable damage, notify your Dealer or the nearest Hanna office immediately.

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Each kit is supplied with:

- Bromophenol Blue Indicator, 1 bottle with dropper (10 mL);
- HI 38014-0 Alkalinity Reagent, 1 bottle (110 mL);
- 1 calibrated plastic vessel (20 mL) with cap;
- 1 syringe (1 mL) with tip.

Note: Any damaged or defective item must be returned in its original packing materials.

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SPECIFICATIONS

Range	0 to 500 gpg CaCO ₃
Smallest Increment	5 gpg CaCO ₃
Analysis Method	Acid titration using bromophenol blue
Sample Size	5 mL
Number of Tests	100
Case Dimensions	200x120x60 mm (7.9x4.7x2.4")
Shipping Weight	363 g (12.8 oz.)

SIGNIFICANCE AND USE

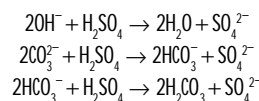
Alkalinity is the quantitative capacity of a water sample to neutralize an acid to a set pH. This measurement is very important in determining the corrosive characteristics of water due primarily to hydroxide, carbonate and bicarbonate ions. Other sources of alkalinity can be from anions that can be hydrolyzed such as phosphate, silicate, borate, fluoride and salts of some organic acids. Alkalinity is critical in the treatments of drinking water, wastewater, boiler & cooling systems.

The Hanna Alkalinity Test Kit makes monitoring easy and quick. The compact size gives the user the versatility to use the kit anywhere. The design makes the kit easy to handle.

Note: 1 gpg (grains per gallon) CaCO₃ is equivalent to 17 ppm CaCO₃ (where ppm - parts per million - is equivalent to mg/L).

CHEMICAL REACTION

Total Alkalinity is determined by neutralizing the sample to a pH of 4.5 using a dilute sulfuric acid solution and a bromophenol blue indicator. This process converts hydroxide ions to water, carbonate and bicarbonate ions to carbonic acid:

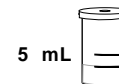


INSTRUCTIONS

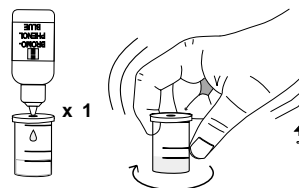
READ ALL THE INSTRUCTIONS BEFORE USING THE TEST KIT

Determination of Total Alkalinity

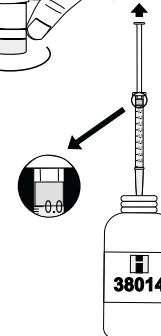
- Remove the cap from the plastic vessel. Rinse the plastic vessel with water sample, fill to the 5 mL mark and replace the cap.



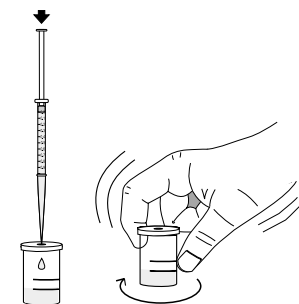
- Through the cap port, add 1 drop of Bromophenol Blue Indicator and mix. If the solution is yellow, then it is acidic and an acidity test must be carried out (see HI 3820 – Hanna Acidity Test Kit). If the solution is green or blue, then proceed to next step.



- Take the syringe and push the plunger completely down into the syringe. Insert tip into the HI 38014-0 Alkalinity Reagent and pull the plunger out until the lower edge of the seal is on the 0.0 mL mark of the syringe.



- Place the syringe tip into the cap port of the plastic vessel and slowly add the titration solution drop by drop, swirling after each drop.



- Continue adding titration solution until the solution in the plastic vessel turns yellow.

- Read off the milliliters of titration solution from the syringe and multiply by 500 to obtain gpg CaCO₃ of Total Alkalinity.

$$\text{mL of titrant} \times 500 = \text{gpg CaCO}_3$$

REFERENCES

1987 Annual Book of ASTM Standard, Volume 11.01 Water (1), pages 151-158.

Official Methods of Analysis, A.O.A.C., 14th Edition, 1984. Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992, pages 445-446.

HEALTH AND SAFETY

The chemicals contained in this test kit may be hazardous if improperly handled. Read the relevant Health and Safety Data Sheets before performing the test.