INSTRUCTION MANUAL

HI38434

Pool Line

Bleach Test Kit

HANNA® instruments

Dear Customer,

Thank you for choosing a Hanna Instruments product. Please read this instruction manual carefully before using the chemical test kit. For more information about Hanna Instruments and our products, visit www.hannainst.com or e-mail us at sales@hannainst.com. For technical support, contact your local Hanna Instruments Office or e-mail us at tech@hannainst.com.

Preliminary Examination

Remove the product from the packing material and examine it carefully. For any further information, please contact Hanna Instruments technical support team at tech@hannainst.com.
Each kit is supplied with:

- Potassium iodide solution, 1 bottle with dropper (30 mL)
- HI38434B-0 Bleach reagent B, sachet (100 pcs.)
- HI38434C-0 Bleach reagent C, bottle with dropper (2 x 30 mL)
- 1 glass Erlenmeyer flask (125 mL)
- 25 plastic pipettes (1 mL)

Note: *Save all packing material. Any damaged or defective item must be returned in its original packing material with the supplied accessories.*

General Description & Intended Use

Sodium hypochlorite is used as a disinfectant in swimming pools. The solution usually contains 10 to 15 per cent available chlorine (equivalent to 100 to 150 g/L), but it rapidly loses its strength during storage. In addition, since it is greatly affected by heat, light, pH and heavy metals, it needs to be monitored regularly.

Specifications

Range	50 to 150 g/L as Chlorine (Cl_2)
Smallest increment	5 g/L (0.5%) as Chlorine (Cl_2)
Analysis method	Iodometric method - Titration
Sample size	1 mL
Number of tests	100 (average)
Case dimensions	235 x 175 x 115 mm (9.2 x 6.9 x 4.5")
Weight	485 g (17.1 oz.)

Chemical Reaction

Available chlorine refers to chlorine liberated by the action of dilute acids on hypochlorite:

$$OCl^- + Cl^- + 2H^+ = Cl_2 + H_2O$$

An iodometric titration method is used in this test kit.
Step 1: The hypochlorite solution is treated with potassium iodide and strongly acidified with acid. The amount of iodine generated is equivalent to the chlorine in the sample.
Step 2: The concentration of iodine is then calculated by titration of thiosulfate ions that reduce the iodine back to iodide ions.

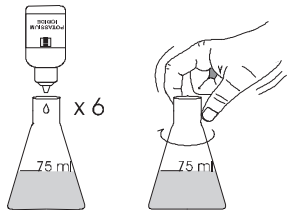
Step 1: $OCl^- + 2H^+ + 2I^- \rightarrow Cl^- + I_2 + H_2O$

Step 2: $I_2 + 2S_2O_3^{2-} \rightarrow 2I^- + S_4O_6^{2-}$

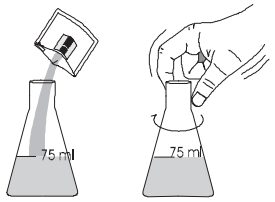
Procedure

Note: *Read the entire instructions before using the kit.*

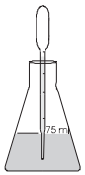
1. Fill the Erlenmeyer flask with about 70-75 mL of tap water (the residual chlorine in the tap water will not affect the test).
2. Add 6 drops of Potassium iodide solution and swirl gently to mix.



3. Add 1 packet of HI38434B-0 bleach reagent B and swirl gently to dissolve. Next, mix and check the pH of the solution in the Erlenmeyer flask: the pH should always be below 3. If not, add packets of HI38434B-0 bleach reagent B, one at a time, until the pH value drops below 3.

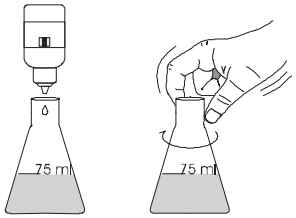


4. Add 1 mL of sample to the Erlenmeyer flask using the plastic pipette. Dispense the sample below the solution level in the flask. If hypochlorite is present, the solution will turn a dark orange color.



Note: *Use the plastic pipettes for about 5 times each, rinsing them with tap water after every test. Discard when brittle and use a new one.*

5. Slowly add drops of HI38434C-0 bleach reagent C while swirling after each drop and counting the drops until the solution changes from yellow to colorless.
   Always hold the dropper vertically, swirling the titrated solution after each addition.



6. To obtain the concentration in % of Chlorine in the sample, multiply by 0.5 the number of drops of the titration reagent HI38434C-0 bleach reagent C used to turn the solution colorless.

$$\#\ \text{of DROPS} \times 0.5 = \%\ \text{Chlorine}$$

The result obtained can also be expressed in g/L by multiplying the % number by 10.

Accessories

HI38434-100	Pool Line bleach test kit replacement reagent (100 tests)

References

Vogel's Textbook of Quantitative Chemical Analysis, 5th ed. Longman Scientific & Technical, 10.120.

Health & Safety

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

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