

Instruction Manual

HI 3831 Chlorine Test Kit

HANNA ISO 9000 Certified
instruments Company since 1992
http://www.hannainst.com

Dear Customer,

Thank you for choosing a Hanna Product. Please read the instructions carefully before using the chemical test kit. It will provide you with the necessary information for a correct use of the kit.

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.

Each kit is supplied with:

- Calibrated vessel (50 mL);
- Reagent 1 (30 mL);
- Reagent 2 (30 mL);
- Reagent 3 (30 mL);
- Color Comparison Cube.

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

SPECIFICATIONS

Range	0 to 2.5 mg/L (ppm) Chlorine
Analysis Method	Colorimetric
Sample Size	5 mL
Number of Tests	110 (average)
Case Dimensions	200x120x60 mm (7.9x4.7x2.4")
Shipping Weight	460 g (1 lb.)

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SIGNIFICANCE AND USE

In pools and drinking water supplies, chlorination serves to kill or deactivate disease-producing microorganisms. It can also improve water quality by reacting with ammonia, iron, sulfide and some organic substances. However, an excessive concentration of chlorine in water can produce adverse conditions, such as formation of carcinogenic chloroform or other toxins. To maximize the purpose for chlorination and minimize any adverse effects, it is essential to monitor the chlorine levels closely.

The Hanna Chlorine Test Kit determines the Chlorine concentration in water via a color cube. This makes the test kit practical for field use. No iodine or bromine can be present for this test to work properly.

CHEMICAL REACTION

The addition of chlorine to water produces hydrochloric and hypochlorous acids. The hypochlorous acid acts as the disinfectant and bleaching agent. These are known as free chlorine. The formation of chloramines and nitrogen trichloride will occur if ammonia is present. These are known as bound chlorine. Both, free and total chlorine are measured by a colorimetric method. The sample is initially treated with a phosphate buffer to a pH of approximately 6.3 pH. The addition of DPD (N,N-diethyl-p-phenylenediamine) is immediately oxidized by chlorine producing a reddish color. The color intensity of the solution determines the free chlorine concentration. The total chlorine determination requires an excess addition of iodide ions to the solutions. The iodide ions react with chloramines and form iodine. The iodine readily oxidizes the DPD, thus adding to the red color.

REFERENCES

Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985, pages 309-310.

ACCESSORIES

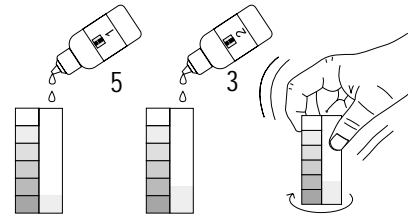
HI 3831-100 Spare reagents (100 tests)

INSTRUCTIONS

READ ALL THE INSTRUCTIONS BEFORE USING THE TEST KIT

Free Chlorine

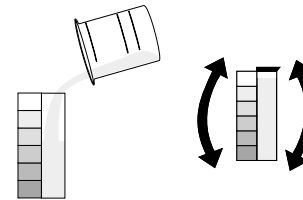
- Add 5 drops of Reagent 1 and 3 drops of Reagent 2 to the color comparison cube and mix by carefully swirling the cube in tight circles.



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



- Transfer the 5 mL water sample from the plastic vessel into the color comparison cube. Replace the cap and mix it by inverting several times.

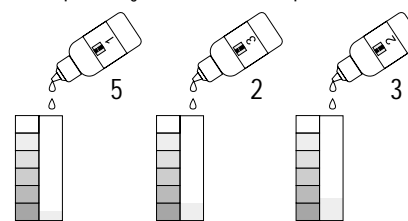


- Determine which color band best matches the solution in the vessel and record the results in mg/L (ppm) free chlorine.

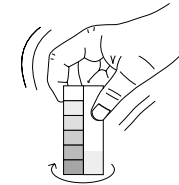


Total Chlorine

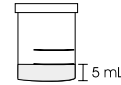
- Add 5 drops of Reagent 1, 2 drops of Reagent 3 and 3 drops of Reagent 2 to the color comparison cube.



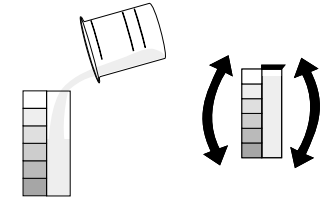
- Mix by carefully swirling the cube in tight circles.



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



- Transfer the 25 mL water sample from the plastic vessel into the color comparison cube. Replace the cap and mix it by inverting several times.



- Determine which color band best matches the solution in the vessel and record the results in mg/L (ppm) total chlorine.



Bound Chlorine

- The concentration of bound chlorine in the sample is determined by subtracting the free chlorine result from the total chlorine result.