## Instruction Manual

# HI 38023
# Total Chlorine Extended Range 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.

Each kit is supplied with:

- Potassium Iodide Solution, 1 bottle with dropper (30 mL);
- Sulfamic Reagent, packets (100 pcs);
- Starch Indicator, 1 bottle with dropper (25 mL);
- Thiosulfate Reagent, 1 bottle (100 mL);
- 1 calibrated plastic vessel (50 mL);
- 1 syringe (1 mL) with tip;
- 1 plastic pipette (1 mL);
- 1 spoon.

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

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## SPECIFICATIONS

| | |
|---|---|
| Range | 10 to 200 mg/L (ppm) as Chlorine |
| Smallest Increment | 10 mg/L as Chlorine |
| Analysis Method | Drop count titration |
| Sample Size | 1 mL |
| Number of Tests | 100 |
| Case Dimensions | 235x175x115 mm (9.2x6.9x4.5") |
| Shipping Weight | 547 g (19.3 oz.) |

## SIGNIFICANCE AND USE

The chlorination of water supplies and polluted waters is used mainly to destroy or deactivate disease-producing microorganisms. It also serves to improve the quality of drinking waters, as chlorine reacts with ammonia, iron, manganese, sulfide and some organic substances.

Nevertheless high amounts of chlorine will produce adverse effects, like formation of compounds which are potentially carcinogenic (e.g. chloroform) or harmful to aquatic life (e.g. chloramines). Thus it is essential to control that the proper amount of chlorine has been added in order to fulfill the primary purpose of disinfecting and to minimize any adverse effect.

**Note:** mg/L is equivalent to ppm (parts per million).

## CHEMICAL REACTION

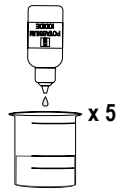
An iodometric titration method is used. The water sample is treated with potassium iodide and strongly acidified with acid. The amount of iodine generated is equivalent to the chlorine in the sample; the concentration of iodine is calculated by titration with thiosulfate ions that reduce iodine back to iodide ions.

## INSTRUCTIONS

READ THE ENTIRE INSTRUCTIONS BEFORE USING THE KIT

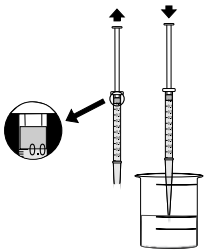
1- Fill the calibrated vessel with tap water up to the 50 mL mark (the residual chlorine in tap water will not affect the test).


2- Add 5 drops of Potassium Iodide Solution and swirl gently to mix.



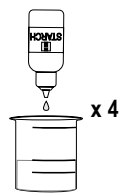

3- Add 1 packet of Sulfamic Reagent and use the spoon to mix and dissolve.


4- Use the syringe to add 1 mL of your sample to the vessel, dispensing the sample below the solution level in the vessel.

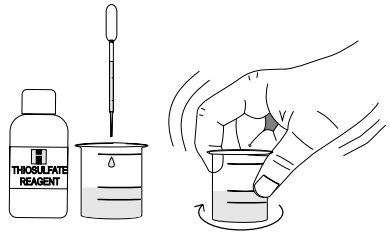



**Note:** To measure exactly 1.0 mL of sample with the syringe, push the plunger completely into the syringe and insert the tip into sample. Pull the plunger out until the lower edge of the seal is on the 0.0 mL mark of the syringe. Insert the syringe into the vessel and push the sample out until the lower edge of the seal is on the 1.0 mL mark.

5- Add 4 drops of Starch Indicator and swirl gently to mix. If chlorine is present, the solution will turn a blue color.




6- Using the 1 mL plastic pipette, add Thiosulfate Reagent drop by drop, swirling after each drop, while keeping an accurate count of the drops being added to the solution.




7- Continue adding Thiosulfate Reagent until the solution changes from blue to colorless.

8- To obtain the concentration in mg/L (or ppm) of total chlorine in your sample, multiply by 10 the number of drops of Thiosulfate Reagent used to turn the solution from blue to colorless.

**drops x 10 = mg/L Total Chlorine**

## REFERENCES

*Standard methods for the Examination of Water and Wastewater*, 20th Ed., 1998, APHA-AWWA-WEF

## HEALTH AND SAFETY

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