

HI 38015 Chloride Extended Range Test Kit

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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 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:

- HI 38015A-0 Chloride Reagent, 1 bottle (100 mL);
- HI 38015B-0 Chloride Reagent, 2 bottles with dropper (2x25 mL);
- HI 38015C-0 Chloride Reagent, 1 bottle (100 mL);
- Demineralizer Bottle with filter cap for about 12 liters of deionized water (depending on the hardness level of water to be treated);
- 1 calibrated plastic vessel (50 mL) with cap;
- 1 plastic pipette (3 mL);
- 1 plastic pipette (1 mL);
- 2 syringes (1 mL) with tips;
- 1 brush.

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

ISTR38015 02/01

SPECIFICATIONS

Range	500 to 10000 mg/L (ppm) Cl ⁻ 5000 to 100000 mg/L (ppm) Cl ⁻
Smallest Increment	100 mg/L [500 to 10000 mg/L range] 1000 mg/L [5000-100000 mg/L range]
Analysis Method	Silver nitrate titration
Sample Size	2.5 mL and 0.25 mL
Number of Tests	100
Case Dimensions	235x175x115 mm (9.2x6.9x4.5")
Shipping Weight	664 g (23.4 oz.)

SIGNIFICANCE AND USE

Chloride ions are one of the major inorganic anions in water and wastewater. Although high concentrations of chloride in water are not known to be toxic to humans, its regulation is mainly due to adverse effect on taste. It is essential to monitor chloride concentration in boiler systems to prevent metal parts being damaged. In high levels, chloride can corrode stainless steel and be toxic to plant life.
The Hanna Test Kit is equipped with all you need to determine chloride level of water. The kit is quick and easy to use.

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

CHEMICAL REACTION

The chloride level in mg/L (ppm) is determined by a silver nitrate titration, using potassium chromate as indicator. The color change from yellow to brick-red determines the end point of this titration.

INSTRUCTIONS

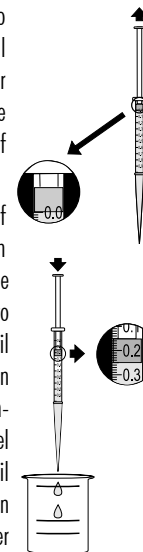
READ ALL THE INSTRUCTIONS BEFORE USING THE TEST KIT

Note: Label the two syringes to avoid cross-contamination as follows:

tag the syringe to be used for sample extraction as "S" and "T" the other for titration (HI 38015C-0).

High Range - 5000 to 100000 mg/L of Chloride

- 1- To measure chloride in the 5000 to 100000 mg/L range, rinse and fill the S (sample) syringe with water sample. Remove the cap from the plastic vessel and add 0.25 mL of sample.

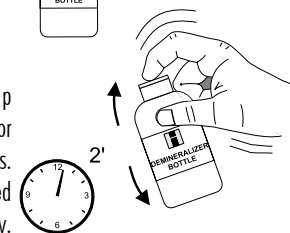


- Note:** To measure exactly 0.25 mL of sample with the syringe, push the plunger completely into the syringe and insert the tip into the sample. Pull the plunger out until the lower edge of the seal is on 0.0 mL mark of the syringe. Insert the syringe into the vessel and push the sample out until the lower edge of the seal is on the 0.25 mL mark (the longer mark between 0.2 and 0.3).

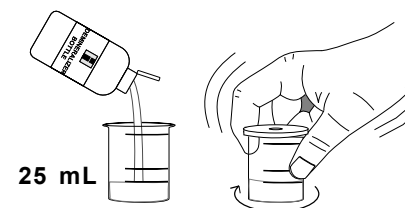
- 2- Remove the cap and fill the Demineralizer Bottle with tap water.



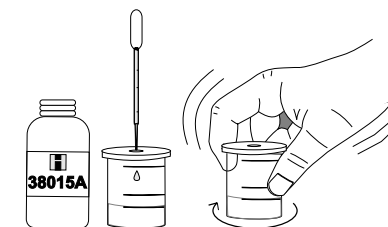
- 3- Replace the cap and shake gently for at least 2 minutes. The demineralized water is now ready.



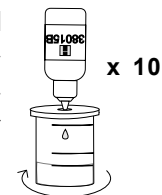
- 4- Flip open the top of the Demineralizer Bottle cap. By gently squeezing the bottle, add demineralized water to the vessel up to the 25 mL mark. Replace the cap and swirl to mix.



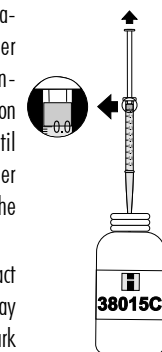
- 5- Using the 1 mL plastic pipette, add to the vessel 1 mL of HI 38015A-0 reagent. Replace the cap and swirl the vessel in tight circles to mix.



- 6- While swirling the vessel, add 10 drops of HI 38015B-0 reagent through the cap port. The solution will become a yellow color.

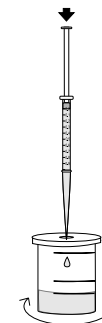


- 7- Take the titration syringe (T labeled), and push the plunger completely into the syringe. Insert tip into HI 38015C-0 solution and pull the plunger out until the lower edge of the plunger seal is on the 0 mL mark of the syringe.



Caution: Avoid skin and eyes contact with HI 38015C-0 reagent. It may cause irritation to eyes and dark spots on skin for some time.

- 8- Place the syringe into the cap of the plastic vessel and slowly add the titration solution one drop at a time. Swirling to mix after each drop. Continue adding titration solution until the solution in the plastic vessel changes from yellow to brick-red.



- 9- Read off the milliliters of titration solution from the syringe scale and multiply by 100000 to obtain mg/L (ppm) of Chloride.

Low Range - 500 to 10000 mg/L of Chloride

If the result is lower than 5000 mg/L, the precision of the test can be improved by following the steps below.

2.5 mL



- 10- Remove the cap from the large plastic vessel and use the 3 mL plastic pipette to add 2.5 mL of sample.

- 11- Follow the instructions from step 4 to 8.

- 12- Read off the milliliters of titration solution from the syringe scale and multiply by 10000 to obtain mg/L (ppm) of Chloride.

Note: If the sample pH is lower than 2 or higher than 11, add respectively sodium hydroxide or sulfuric acid to adjust the pH at a value between 7 and 10. During titration sample becomes turbid.

Interferences: Bromide, iodide, cyanide and sulfide; orthophosphate above 250 ppm and polyphosphate above 25 ppm precipitate as silver salts; iron above 10 ppm masks the endpoint. Intensely colored samples should be adequately treated before performing the test. Suspended matter in large amounts should be removed by prior filtration.

REFERENCES

Official Methods of Analysis, A.O.A.C., 14th Edition, 1984, p. 625.
Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985, pages 288-290.

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.