

WataTest[®]

OPERATING INSTRUCTIONS

STABILIZED SODIUM HYPOCHLORITE



WATA[®]'s quality control of the sodium hypochlorite solution is essential in determining the dosage to be applied, depending on its usage.



This reagent measures the concentration of chlorine in grams per litre (Cl₂, HOCl, OCl⁻) within a range of 1 to 7 g/L (0.1 to 0.7% active chlorine and 0.32 to 2.23 °Cl) with an accuracy of ± 0.5 g / L.

The ideal result for the production of sodium hypochlorite should be 6 g/L. If you get a different concentration, please adjust the sodium hypochlorite dilution in the water to be treated or repeat the process with a new salt solution.

- ⚠ Always use a clean, dry syringe to withdraw the WataTest[®] reagent.
- ⚠ The pH of the solution to be analyzed must be less than 11.42 (WataTest[®] validity range). This is the case with sodium hypochlorite produced by WATA[®].
- ⚠ Keep the WataTest[®] reagent away from light and at room temperature (25 °C).
- ⚠ Close the bottle firmly after each usage to prevent the liquid oxidizing.
- ⚠ Do not use after expiry date stated on the label of the WataTest[®] bottle.

USING THE WATATEST WITH SODIUM HYPOCHLORITE STABILIZED WITH CAUSTIC SODA (NAOH 5M)

- ⚠ This method allows the testing of the active chlorine concentration of a sodium hypochlorite solution stabilized with NaOH.
- ⚠ This method is not a substitute for the test with sodium thiosulfate, which is more precise. It must not be used if the sodium hypochlorite is commercialized on a medium or large scale.
- ⚠ This method can only be used in a well-ventilated laboratory. Failure to follow the correct procedure or the use of quantities different from those indicated in this manual can cause a significant decrease of the pH of the solution. A sudden emission of chlorine gas can also happen, which can cause severe irritation of the eyes, of the nose and of the lungs.
- ⚠ Wear safety glasses and a mask when following the procedure.

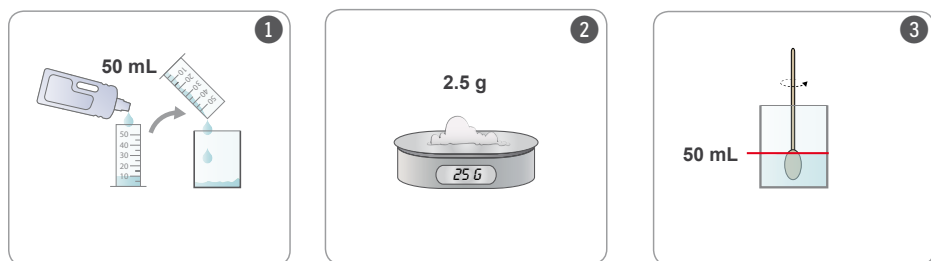
EQUIPMENT

- ▶ 1 WataTest[®] reagent
- ▶ 2 1 mL syringes
- ▶ 1 3 mL graduated pipette
- ▶ 1 white plastic spoon (provided) or small container with a white base
- ▶ 1 100 mL graduated cylinder
- ▶ 2 100 mL beakers
- ▶ 1 precision balance with an accuracy of ± 10 mg
- ▶ 1 plastic spatula (not metallic!)
- ▶ 1 pH-meter
- ▶ 1 protective mask and 1 pair of safety glasses.

INGREDIENTS

- ▶ Citric acid powder
 - ▶ Distilled water
 - ▶ Stabilized sodium hypochlorite to be tested
- ⚠ The procedure for checking the active chlorine concentration in a stabilized sodium hypochlorite solution has two steps.

STEP 1 : USING CITRIC ACID, LOWERING OF THE PH OF THE SODIUM HYPOCHLORITE SOLUTION TO A PH BETWEEN 9.5 AND 10.5

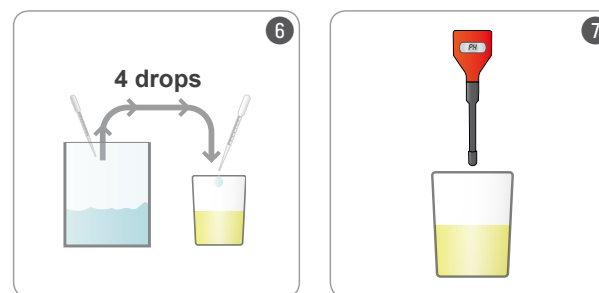


- 1 Measure 50 mL of distilled water using the graduated 100 mL cylinder and pour it in the beaker of 100 mL.
- 2 Weigh 2,5 grams of citric acid and add it to the 50 mL of distilled water in the beaker.
- 3 Mix the solution with the spatula until the citric acid is dissolved. Label the beaker.



- 4 Measure 50 mL of the stabilized sodium hypochlorite solution to be tested and add it to a second 100 mL beaker.
- ⚠ Be sure to correctly label the beakers, in order to avoid any confusion.**
- 5 Using the pH-meter, measure the pH of the stabilized sodium hypochlorite solution. Write down the measured value in the table shown below (initial condition).

Number of added drops	pH
0 (initial condition)	
4	



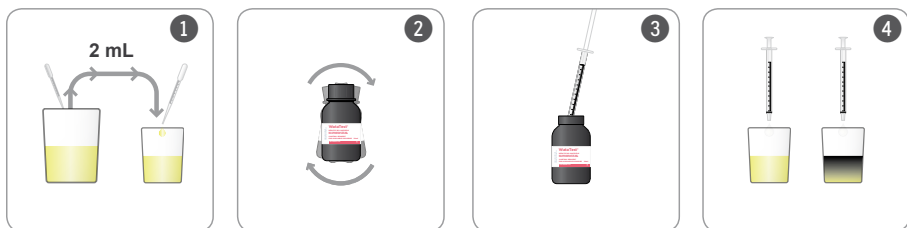
- 6 Add 4 drops of the citric acid solution using a 1 mL syringe and mix the solution with the spatula.
- 7 Measure and write down the pH.
- 8 If the pH is higher than 11, add 4 more drops. Mix and measure the pH of the solution. Continue until the pH drops below 11. **Repeat this step until the pH is less than 11, then move on to step 9.**
- 9 When the pH is below 11, add 2 drops of citric acid. Mix the solution and measure the pH. **Repeat this step until the pH reaches a value between 9.5 and 10.5. The sodium hypochlorite sample has been properly acidified.**

⚠ If the pH drops below 9.5, throw away the 50 mL sodium hypochlorate sample and start over at step 4.

⚠ Never lower the pH below 4. The solution will start releasing chlorine gas. This gas is irritating and can damage the eyes.

Once the sodium hypochlorite sample is correctly acidified (STEP 1) you can measure the concentration with the Watatest (STEP 2, see next page)

STEP 2 : MEASUREMENT OF THE CONCENTRATION WITH THE WATATEST®



- 1 Withdraw exactly 2 mL of the acidified sodium hypochlorite sample and release it into the provided spoon or a small container with a white base.
- 2 Shake the WataTest® reagent bottle.
- 3 Fill the syringe with the WataTest® reagent and get ready to count the number of drops that will be used.
- 4 Holding the syringe vertically drip the WataTest® reagent drop by drop into the white plastic spoon or small bowl and count the number of drops used to change the colour of the solution. Divide this number by two to get the concentration in grams of chlorine per litre (e.g. 12 drops = 6 g/L).

⚠ Shake gently after each drop. If the solution in the spoon or the small white container returns to its light colour, keep adding just one more drop until the colour change is irreversible.

⚠ The sodium hypochlorite sample for which the pH was lowered using the citric acid must not be re-stabilized or reused. Pour the solution into the sink.

- 5 The result obtained corresponds to the concentration of your stabilized sodium hypochlorite solution. Write it down on the label of the bottles.

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