

## HI 3822 Sulfite Test Kit



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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 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:

- Sulfamic Acid Solution, 1 bottle with dropper (30 mL);
- EDTA Reagent, 1 bottle with dropper (30 mL);
- Sulphuric Acid solution, 1 bottle with dropper (15 mL);
- Starch Indicator, 1 bottle with dropper (10 mL);
- HI 3822-0 Reagent Titrant Solution, 1 bottle (120 mL);
- 2 calibrated vessels (20 & 50 mL);
- 1 calibrated syringe with tip.

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

ISTR3822R3 09/05

## Specifications

Range	0 to 20 mg/L (ppm) $\text{Na}_2\text{SO}_3$ 0 to 200 mg/L (ppm) $\text{Na}_2\text{SO}_3$
Smallest Increment	0,2 mg/L (ppm) $\text{Na}_2\text{SO}_3$ 2 mg/L (ppm) $\text{Na}_2\text{SO}_3$
Analysis Method	Iodometric method – Titration
Sample Size	5 mL & 50 mL
Number of Tests	110 (average)
Case Dimensions	260x120x60 mm (10.2x4.7x2.4")
Shipping Weight	910 g (34.0 oz.)

## Significance and Use

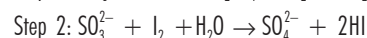
There are many reasons to monitor sulfite concentration in water. In industrial applications, a sulfite concentration of approximately 20 mg/L must be maintained to prevent pitting and oxidation of metal components as in boiler feed and effluent waters. A high level of sulfite results in a lowered pH, thus promoting corrosion. The monitoring of sulfite is important in environmental control. Sulfite ions are toxic to aquatic lifeforms and their ability to remove dissolved oxygen in water will destroy the delicate balance of ecology of lakes, rivers and ponds.

The Hanna Sulfite Test Kit makes monitoring easy, quick and safe. The compact size gives the user the versatility to use the kit practically anywhere. The design of the kit makes it practically impossible to spill the reagents, thereby reducing the possibility of injury or damage to property.

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

## Chemical Reaction

A iodometric method is used. Iodide ions react with iodate ions in the presence of sulfuric acid to form iodine (Step 1). The sulfite present in the water sample then reduces the iodine back to iodide (Step 2). An excess of iodate ions will generate additional iodine, which will form a blue complex with starch. This color change determines the end point of this titration.



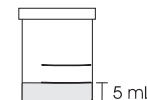
## Instructions

READ ALL THE INSTRUCTIONS BEFORE USING THE TEST KIT  
LOOK AT THE BACK PAGE FOR THE ILLUSTRATED PROCEDURE

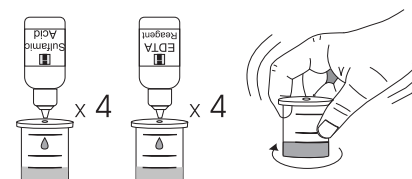
**Note:** Push and twist pipet tip onto tapered end of syringe ensuring an air tight-fit.

### HIGH RANGE – 0 to 200 mg/L $\text{Na}_2\text{SO}_3$

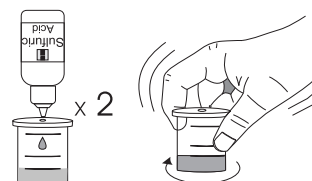
- Remove the cap from the small plastic vessel. Rinse the plastic vessel with water sample, fill to the 5 mL mark and replace the cap.



- Add 4 drops each of Sulfamic Acid Solution and EDTA Reagent through the cap port and mix by carefully swirling the vessel in tight circles.



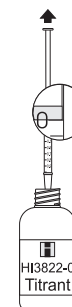
- Add 2 drops of Sulfuric Acid Solution through the cap port and mix as described before.



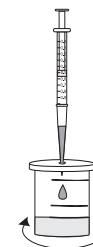
- Add 1 drop of Starch Indicator through the cap port and mix.



- Take the titration syringe and push the plunger completely into the syringe. Insert tip into HI 3822-0 Reagent Titrant Solution and pull the plunger out until the lower edge of the plunger seal is on the 0 mL mark of the syringe.



- Place the syringe tip into the cap port of the plastic vessel and slowly add the titration solution dropwise, swirling to mix after each drop. Continue adding titration solution until the solution in the plastic vessel changes from colorless to blue.



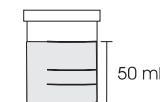
- Read off the milliliters of titration solution from the syringe scale and multiply by 200 to obtain mg/L (ppm) sodium sulfite.



### LOW RANGE – 0 to 20 mg/L $\text{Na}_2\text{SO}_3$

- If results are lower than 20 mg/L, the precision of the test can be improved as follows.

Remove the cap from the large plastic vessel. Rinse the vessel with the water sample, fill to the 50 mL mark and replace the cap. Proceed with the test as described before and multiply the values on the syringe scale by 20 to obtain mg/L sodium sulfite in the sample.



## References

1987 Annual Book of ASTM Standard, Volume 11.01 Water (1), pages 732-736.

Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition, 1998, page 4-173.

## Health and Safety Data Sheets

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

# HI 3822 SULFITE TEST KIT

**1**

5 mL 5 mL  
0-200 mg/L

50 mL 50 mL  
0-20 mg/L

**2**

Sulfamic Acid x 4  
EDTA Reagent x 4

**3**

Sulfamic Acid x 2

**4**

Starch Indicator x 1

**5**

HI 3822-0 Titrant

**6**

5 mL sample

x 200 =  
mg/L Na<sub>2</sub>SO<sub>3</sub>

**7**

50 mL sample

x 20 =  
mg/L Na<sub>2</sub>SO<sub>3</sub>