Instruction Manual

HI 38001
Sulfate Low and High Range Test Kit

HANNA instruments

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 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:

- HI 38001A-0 Sulfate Reagent, packets (2x100 pcs);
- HI 38001B-0 LR Sulfate Reagent, 1 bottle (100mL);
- HI 38001B-0 HR Sulfate Reagent, 1 bottle (100mL);
- HI 38001C-0 Sulfate Reagent, 1 bottle with dropper (10 mL);
- Complexing Agent, 1 bottle with dropper (20 mL);
- Sulfate Solution, 1 bottle (30 mL);
- 2 plastic vessels (50 mL);
- 2 syringes (1 mL).

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

ISTR38001   10/99   PRINTED IN ITALY

SPECIFICATIONS

Range	100 to 1000 mg/L as Sulfate LR
	1000 to 10000 mg/L as Sulfate HR
Smallest Increment	10 mg/L Sulfate LR
	100 mg/L Sulfate HR
Analysis Method	Titration
Sample Size	15 mL
Number of Tests	200
Case Dimensions	235x175x115mm (9.2x6.9x4.5")
Shipping Weight	830 g (29.3 oz.)

SIGNIFICANCE AND USE

Sulfate is largely present in natural waters in a wide range of concentrations. It is not toxic but has to be kept below a certain threshold to prevent it from creating an unpleasant taste in water. The concentrations are particularly higher close to mine run-off water. Sulfate is extensively used as a nutrient in agriculture.

The procedure for determining sulfate is a modification of the Determination of Sulfate by Sulfonazo III.

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

CHEMICAL REACTION

Sulfate is determined via a titrimetric method. The reaction end point is indicated by the change in color of the solution from violet to blue.

INSTRUCTIONS

READ THE ENTIRE INSTRUCTIONS BEFORE USING THE KIT

Low Range - 100-1000 mg/L Sulfate

- Remove the caps from the plastic vessels. Fill one vessel with 15 mL of the sample, up to the mark, and, when you perform the test for the first time, fill the other plastic vessel with 15 mL of Sulfate Solution. This will help you in identifying the final color of your sample.
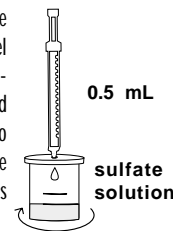

15 mL

- Add 1 packet of HI 38001A-0 Sulfate Reagent to each vessel, replace the cap and swirl gently to dissolve.

- Add 2 drops of Complexing Agent to each vessel and swirl to mix.

x2

- Add 1 drop of HI 38001C-0 Sulfate Reagent to each vessel and mix by carefully swirling in tight circles. The solutions will turn violet. Replace the caps.

x1

- Insert syringe tip into HI 38001B-0 LR titration solution and pull the plunger out until the lower edge of the black plunger seal is on the first graduation mark (zero) on the syringe body.

0.1
0.2
0.3
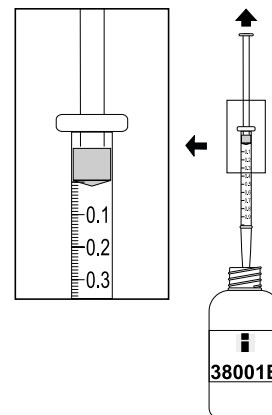
38001B

- Place the syringe tip into the cap port of the plastic vessel containing the Sulfate Solution and, while swirling, add 0.5 mL of HI 38001B-0 LR to see clearly the color change from violet to blue. This is your color change reference.

0.5 mL

sulfate solution

- Refill the syringe with HI 38001B-0 LR reagent and place the syringe tip into the cap port of the plastic vessel containing the sample. Add slowly the titration solution drop by drop, swirling and waiting a few seconds after each drop.

Note: The solution becomes turbid but this reaction will not affect the result.

- Continue adding the titration solution until the solution in the plastic vessel changes from violet to blue.

- Read off the milliliters of titration solution from the syringe scale and multiply by 1000 to obtain mg/L (ppm) of Sulfate.

$$x1000 = ppm\ SO_4^{2-}$$
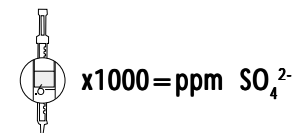
- If the solution will not turn blue, the sample contains more than 1000 mg/L of sulfate.

High Range - 1000-10000 mg/L Sulfate

- Remove the cap from the plastic vessel and fill it with 15 mL of the sample, up to the mark.

- Proceed with the test as described before, using HI 38001B-0 HR as titration solution instead of HI 38001B-0 LR (fill the other syringe to perform this test).

15 mL

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

$$x10000 = ppm\ SO_4^{2-}$$
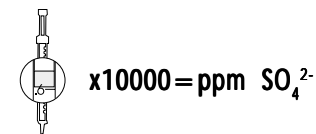
Note: To measure Sulfate in the 20 to 100 ppm range, use the HI 38000 Sulfate Test Kit.

REFERENCES

Adaptation of Determination of Sulfate with Sulfonazo III.

HEALTH AND SAFETY

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