

Instruction Manual

HI 3818 Carbon Dioxide Test Kit

HANNA
instruments

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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:

- Phenolphthalein Indicator, 1 bottle (10 mL) with dropper;
- HI 3818-0, 1 bottle (120 mL);
- 2 calibrated vessels (10 and 50 mL);
- 1 calibrated syringe.

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

SPECIFICATIONS

Range	0 to 10 mg/L (ppm) CO ₂ 0 to 50 mg/L (ppm) CO ₂ 0 to 100 mg/L (ppm) CO ₂
Smallest Increment	0.1 mg/L [in the 0-10 mg/L range] 0.5 mg/L [in the 0-50 mg/L range] 1 mg/L [in the 0-100 mg/L range]
Analysis Method	Base titration using phenolphthalein indicator
Sample Size	5 mL, 10 mL and 50 mL
Number of Tests	110 (average)
Case Dimensions	200x120x60 mm (7.9x4.7x2.4")
Shipping Weight	460 g (1 lb.)

ISTR3818R3 07/01 PRINTED IN ITALY

SIGNIFICANCE AND USE

Certain carbon dioxide levels are required in nature and in man's environment. Generally, lakes and rivers contain less than 10 mg/L * carbon dioxide, however stagnant or polluted water can generate large amounts due to organic or mineral decomposition. These results can make the water corrosive and toxic to aquatic life-forms like fish. The monitoring of carbon dioxide levels is also critical in the man-made environment. A certain amount of carbon dioxide is reintroduced into potable water during the final stages of the water-softening process. In water systems, a delicate balance of carbon dioxide must be maintained to prevent either corrosion or encrustation of pipes and storage tanks.

Carbon dioxide levels can be measured quickly and safely with the Hanna Carbon Dioxide Test Kit. This compact, portable kit allows the user the option of field or laboratory use. The design makes the kit easy to handle and, except for HI 3818-0, practically prevents accidental injury or damage due to spills.

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

CHEMICAL REACTION

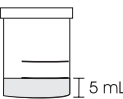
Carbon dioxide (as carbonic acid) in the water sample is neutralized with a dilute sodium-hydroxide solution to a pH of 8.3 using a phenolphthalein indicator. This process converts carbonic acid to sodium bicarbonate:

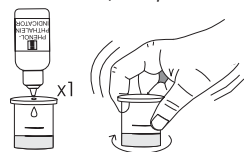


INSTRUCTIONS

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

Determination in the 0 to 100 mg/L Carbon Dioxide

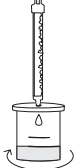
- Remove the cap from the small plastic vessel. Rinse the plastic vessel with water sample, fill to the 5 mL mark and replace the cap. 
- Add 1 drop of Phenolphthalein indicator through the cap port, and mix carefully swirling the vessel in tight circles. If the solution is pink or red, then record as 0 mg/L CO₂. If the solution remains colorless, then proceed to next step.

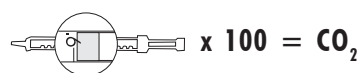


- Take the titration syringe and push plunger completely into the syringe. Insert tip into HI 3818-0 solution and pull plunger out until the lower edge of the plunger seal is on the 0 mL mark of the syringe.



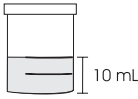
Note: Push and twist pipet tip onto tapered end of syringe ensuring an airtight fit.

- Place syringe tip into the cap port of the plastic vessel and slowly add the titration solution drop-wise, swirling to mix after each drop. Continue adding titration solution until the solution in the plastic vessel turns pink. 
- Read off the milliliters of titration solution from the syringe scale, and multiply by 100 to obtain mg/L (ppm) CO₂.



Determination in the 0 to 50 mg/L Carbon Dioxide

If results are lower than 50 mg/L, the precision of the test can be improved as follows.

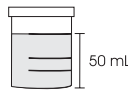
- Remove the cap from the small plastic vessel. Rinse the plastic vessel with water sample, fill to the 10 mL mark and replace the cap. 

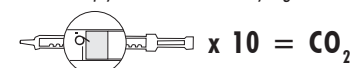
- Proceed with the test as described before. To obtain the result multiply the values on the syringe scale by 50.



Determination in the 0 to 10 mg/L Carbon Dioxide

If results are lower than 10 mg/L, the precision of the test can be improved as follows.

- Remove the cap from the large plastic vessel. Rinse the plastic vessel with water sample, fill to the 50 mL mark and replace the cap. 
- Proceed with the test as described before. To obtain the result multiply the values on the syringe scale by 10.



ACCESSORIES

HI 3818-100 Spare reagents (100 tests)

REFERENCES

1987 Annual Book of ASTM Standard, Volume 11.01 Water (1), pages 413-421.

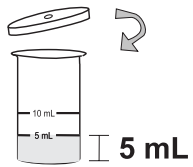
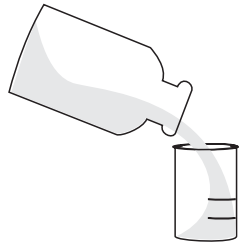
Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992, pages 4-12.

HEALTH AND SAFETY

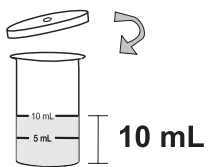
The chemicals contained in this test kit may be hazardous if improperly handled. Read Health and Safety Data Sheets before performing the test.

HI 3818 CARBON DIOXIDE TEST KIT

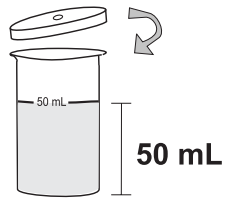
1



0-100 mg/L

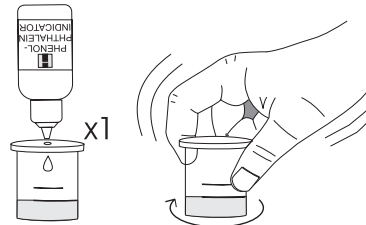


0-50 mg/L

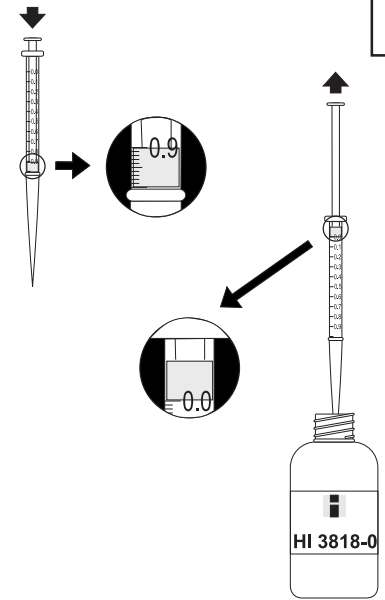


0-10 mg/L

2



3



5 mL sample

10 mL sample

50 mL sample

4

