Nitrite

DOC316.53.01499

Diazotization Method **Method 10271**

0.005 to 0.600 mg/L as NO_2^-–N **Chemkey® Reagents**

Scope and application: For drinking water.

Test preparation

Before starting

Make sure that the sample is colorless and the turbidity value is less than 20 NTU.
Use a new Chemkey for each measurement.
Do not touch the Chemkey with hands.
Do not move the Chemkey after it is installed in the meter.
The display shows a progress bar with the time that remains until the measurement is completed. Different parameters have different reaction times.
The meter automatically identifies the type of Chemkey(s) that is installed.
Refer to the meter documentation for additional information.
The Chemkeys are articles and have no MSDS/SDS.
Dispose of reacted solutions according to local, state and federal regulations. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

Items to collect

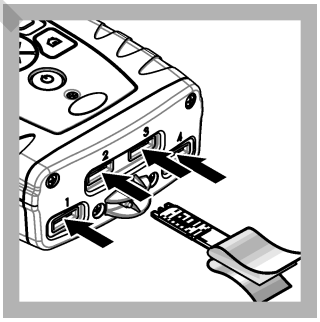
Description	Quantity
Nitrite Chemkey	1

Refer to Consumables and replacement items on page 3 for order information.

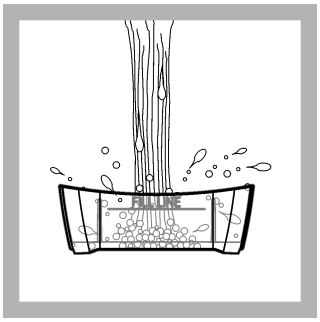
Test procedure



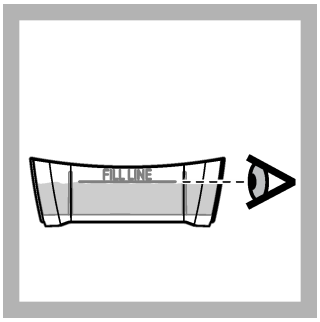
1. Peel back the packaging to show the end of the Chemkey. Do not touch the Chemkey with hands.



2. Put the Chemkey quickly in one movement into any slot. Carefully remove the packaging from the Chemkey.

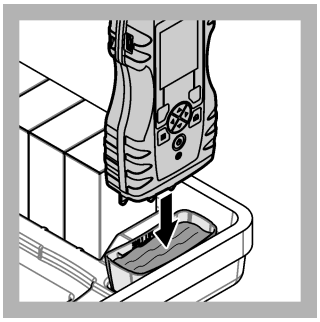


3. Rinse the sample cup with the sample.

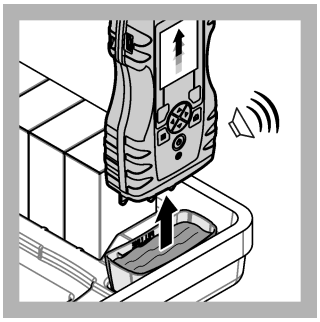


4. Fill the sample cup to the fill-line with sample.

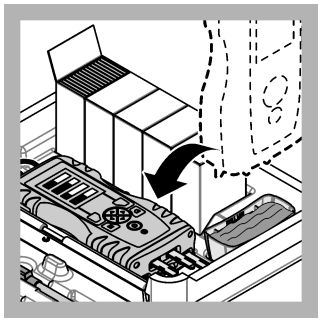
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5. Put the meter into the sample cup.



6. Wait for the sound alert and/or the meter removal animation (within 1 to 2 seconds), then immediately remove the meter from the sample cup.



7. Put the meter back into the case. Wait for the measurement to complete.

Interferences

The substances that are shown in Table 1 interfere in the nitrite determination.

Table 2 shows the substances that were tested and do not interfere at or below the levels that are shown.

Table 1 Interfering substances

Interfering substance	Interference level
Antimonous ions	Interfere by causing precipitation
Auric ions	Interfere by causing precipitation
Bismuth ions	Interfere by causing precipitation
Chloroplatinate ions	Interfere by causing precipitation
Lead ions	Interfere by causing precipitation
Mercurous ions	Interfere by causing precipitation
Metavanadate ions	Interfere by causing precipitation
Nitrate	Very high levels of nitrate (>100 mg/L nitrate as N) seem to undergo a slight amount of reduction to nitrite, either spontaneously or during the course of the test. A small amount of nitrite will be found at these levels.
Silver ions	Interfere by causing precipitation
Strong oxidizing and reducing substances	Interfere at all levels

Table 2 Non-interfering substances

Substance	Maximum level tested
Alkalinity (as $CaCO_3$)	250 mg/L
Aluminum (Al^{3+})	0.2 mg/L
Calcium (Ca^{2+})	1000 mg/L
Chloride (Cl^-)	1200 mg/L
Copper (Cu^{2+})	1.0 mg/L
Iron (Fe^{2+})	1.0 mg/L
Magnesium (Mg^{2+})	1000 mg/L
Manganese (Mn^{2+})	0.2 mg/L

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Table 2 Non-interfering substances (continued)

Substance	Maximum level tested
Nitrate (NO_3^-–N)	10.0 mg/L
Sulfate (SO_4^{2-})	500 mg/L
Zinc (Zn^{2+})	5.0 mg/L

Accuracy check

Standard solution method

Use the standard solution method to validate the test procedure, the reagents and the instrument.

Items to collect:

- 250-mg/L NO_2–N Nitrite Standard Solution
- 200-mL volumetric flask, Class A
- Pipet, adjustable volume, 0.2–1.0 mL and pipet tip
- Deionized water

1. Prepare a 0.5-mg/L nitrite standard solution as follows:
   a. Use a pipet to add 0.4 mL of the 250-mg/L nitrite standard solution into the volumetric flask.
   b. Dilute to the mark with deionized water. Mix well. Prepare this solution daily.
2. Use the test procedure to measure the concentration of the prepared standard solution.
3. Compare the expected result to the actual result.

   Note: *The factory calibration can be adjusted slightly with the standard adjust option so that the instrument shows the expected value of the standard solution. The adjusted calibration is then used for all test results. This adjustment can increase the test accuracy when there are small variations in the reagents or instruments.*

Method performance

The method performance data that follows was derived from laboratory tests during ideal test conditions. Users can get different results under different test conditions.

Method detection limit (MDL)[1] = 0.005 mg/L

Standard	Precision (95% confidence interval)	Sensitivity Concentration change per 0.010 Abs change
0.305 mg/L NO_2^-–N	0.302 to 0.308 mg/L NO_2^-–N	0.005 mg/L NO_2^-–N

Summary of method

Nitrite in the sample reacts with sulfanilic acid to form an intermediate diazonium salt. This combines with chromotropic acid to form a pink colored complex that is proportional to the amount of nitrite in the sample.

Consumables and replacement items

Description	Quantity/Test	Unit	Item no.
Nitrite Chemkey®	1	25/pkg	9429300
Sample cup	1	each	9418100

[1] The U.S. Environmental Protection Agency (USEPA) method detection limit (MDL) is described as the minimum concentration of a substance that can be measured and reported with 99-percent confidence that the analyte concentration is greater than zero.

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Recommended standards

Description	Unit	Item no.
Nitrite Standard Solution, 250 mg/L as N	500 mL	2340249

Optional reagents and apparatus

Description	Unit	Item no.
Flask, volumetric, Class A, 200 mL	each	1457445
Pipette, adjustable volume, 0.1–1.0 mL	each	BBP078
Pipette tips, for 0.1–1.0 mL pipette	100/pkg	BBP079
Water, deionized	4 L	27256

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