



Method 10019

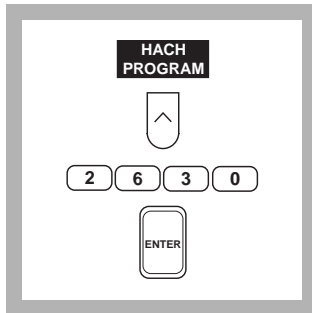
Diazotization Method

Test 'N Tube™ Vials

LR (0 to 0.500 mg/L NO₂⁻-N)

Scope and Application: For water, wastewater and seawater.

The estimated detection limit for program number 2630 is 0.0013 mg/L NO₂⁻-N.



1. Press the soft key under **HACH PROGRAM**.

Select the stored program for the Test 'N Tube Nitrite method by pressing **2630** with the numeric keys.

Press: **ENTER**

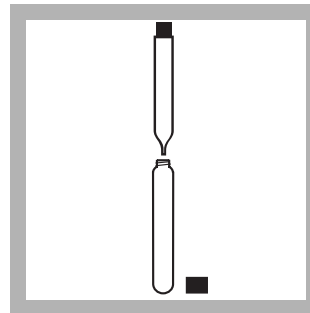
Note: If sample cannot be analyzed immediately, see *Sample Collection, Storage and Preservation* following these steps.



2. The display will show: **HACH PROGRAM: 2630 Nitrite, TNT**

The wavelength (λ), **507 nm**, is automatically selected.

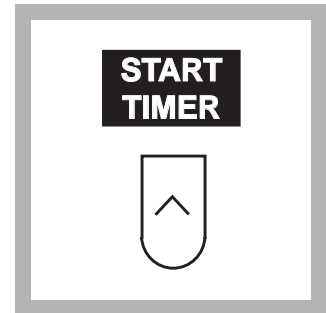
Note: For best results, determine a reagent blank for each new lot of reagent as follows. Prepare a reagent blank by repeating Steps 3 through 10, using deionized water as the sample. Zero the instrument on deionized water by pressing the soft key under **ZERO**. Insert the reagent blank and the blank value will be displayed. Correct for the reagent blank by pressing the soft keys under **OPTIONS, (MORE)**, and then **BLANK:OFF**. Enter the reagent blank value and press **ENTER**. Repeat for each new lot of reagent.



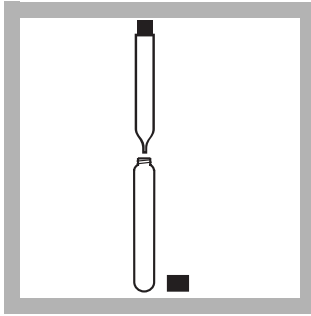
3. Fill a Test 'N Tube NitriVer 3 Nitrite vial with 5 mL of sample. Cap and shake to dissolve powder. This is the prepared sample.

Note: For proof of accuracy, use a 0.250-mg/L nitrite nitrogen standard solution (preparation given in the *Accuracy Check* section) in place of the sample.

Note: A pink color will develop if nitrite nitrogen is present.



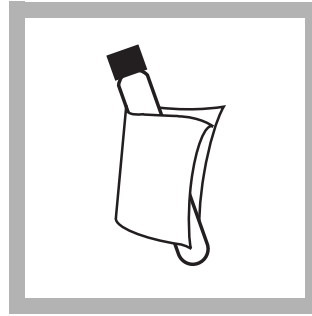
4. Press the soft key under **START TIMER**. A 20-minute reaction period will begin.



5. When the timer beeps, fill an empty Test 'N Tube vial with 5 mL of sample (the blank).



6. Insert the Test 'N Tube Adapter into the sample cell module by sliding it under the thumb screw and into the alignment grooves. Fasten with the thumb screw.

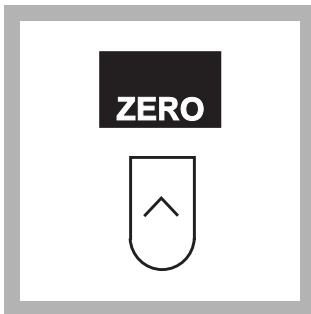


7. Wipe the outside of the vials with a towel.

Note: Wiping with a damp towel, followed by a dry one, removes fingerprints and other marks.



8. Place the blank into the cell holder.



9. Press the soft key under **ZERO**.

The display will show:

0.0000 mg/L NO₂⁻-N

Note: If you are using a reagent blank correction, the display will show the correction.

*Note: For alternate concentration units, press the soft key under **OPTIONS**. Then press the soft key under **UNITS** to scroll through the available options. Press **ENTER** to return to the read screen.*



10. Place the prepared sample into the cell holder. The result in mg/L nitrite expressed as nitrogen will be displayed.

*Note: The results can be expressed as NO₂⁻. Press the soft keys under **METHOD OPTIONS**, then **FORM**: to scroll through the available options. Press **ENTER** to return to the read screen.*

Interferences

Interfering Substance	Interference Levels and Treatments
Antimonious ions	Interfere by causing precipitation
Auric ions	Interfere by causing precipitation
Bismuth ions	Interfere by causing precipitation
Chloroplatinate ions	Interfere by causing precipitation
Cupric ions	Cause low results
Ferric ions	Interfere by causing precipitation
Ferrous ions	Cause low results
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) appear 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

Sample Collection, Storage and Preservation

Collect samples in clean plastic or glass bottles.

Store at 4 °C (30 °F) or lower if the sample is to be analyzed within 24 to 48 hours. Warm to room temperature before running the test.

Accuracy Check

Standard Solution Method

Preparing nitrite standards is difficult. A standard should be prepared by a trained chemist. Hach recommends using the standard preparation instructions in *Standard Methods for the Examination of Water and Wastewater*, 18th ed., under the headings “Stock nitrite solution:,” “Intermediate nitrite solution:,” and “Standard nitrite solution:.” These can be found on pp. 4–86. Prepare a 0.250-mg/L standard. Perform the nitrite test on the standard solution.

Method Performance

Precision

Standard: 0.2500 mg/L NO₂⁻-N

Program	95% Confidence Limits
2630	0.2493–0.2507 mg/L NO ₂ ⁻ -N

For more information on determining precision data and method detection limits, refer to Section 1.5.

Estimated Detection Limit

Program	EDL
2630	0.0013 mg/L NO ₂ ⁻ -N

For more information on derivation and use of Hach's estimated detection limit, see Section 1.5.2. To determine a method detection limit (MDL) as defined by the 40 CFR part 136, appendix B, see Section 1.5.1.

Sensitivity

Program Number: 2630

Program	ΔAbs	ΔConcentration
Entire Range	0.010	0.0035 mg/L

See Section 1.5.3 *Sensitivity Explained* for more information.

Calibration Standard Preparation

Preparing nitrite standards is difficult. Calibration should be performed by a trained chemist. Hach recommends using the standard preparation instructions in *Standard Methods for the Examination of Water and Wastewater*, 18th ed., under the headings “Stock nitrite solution;” “Intermediate nitrite solution;” and “Standard nitrite solution”. These can be found on pp. 4–86.

Using the standards prepared above and the analysis procedure, generate a calibration curve.

Summary of Method

Nitrite in the sample reacts with sulfanilic acid to form an intermediate diazonium salt. This couples with chromotropic acid to produce a pink colored complex directly proportional to the amount of nitrite present.

Safety

Good safety habits and laboratory techniques should be used throughout the procedure. Consult the *Material Safety Data Sheet* for information specific to the reagents used. For additional information, refer to Section 1.

Pollution Prevention and Waste Management

For information on pollution prevention and waste management, refer to Section 1.

REQUIRED REAGENTS AND STANDARDS

NitriVer 3 Low range Nitrite Test 'N Tube Vial Set (50 tests).....26083-45
 Includes: (50) NitriVer 3 Nitrite Vials*, (1) 22758-06, (1) 22411-06, (1) 272-42

REQUIRED EQUIPMENT AND SUPPLIES

Description	Quantity Required per test	Unit	Cat. No.
DR/4000 Test Tube Adapter.....	1	each	48189-00
NitriVer 3 Nitrite Vials	1	50/pkg	*
Pipet, TenSette, 1.0 to 10.0 mL	1	each	19700-10
Pipet Tips, for 19700-10 TenSette Pipet	varies	50/pkg	21997-96
Test 'N Tube Vials.....	1	50/pkg	22758-00
Test 'N Tube Vial caps	1	6/pkg	22411-06

OPTIONAL REAGENTS AND STANDARDS

Sodium Nitrite, ACS

	454 g	2452-01
Water, deionized	4 liters	272-56
Water, deionized	100 mL	272-42

OPTIONAL EQUIPMENT AND SUPPLIES

Balance, analytical, 110 VAC.....	each	26103-00
Balance, analytical, 220 VAC.....	each	26103-02
Flask, volumetric, 1000-mL	each	547-53
Test Tube Rack	each	18641-00

* Items not sold separately



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