Nitrite

DOC316.53.01076

USEPA[1] Diazotization Method **Method 10207**

LR (0.015 to 0.600 mg/L NO_2^-–N or 0.05 to 2.00 mg/L NO_2)

TNTplus™ 839

Scope and Application: For wastewater. drinking water, surface water and mineral water

[1] Approved

Test preparation

How to use instrument-specific information

The *Instrument-specific information* table displays requirements that may vary between instruments. To use this table, select an instrument then read across to find the corresponding information required to perform this test.

Table 248 Instrument-specific information

Instrument	Light shield
DR 6000	—
DR 5000	—
DR 3900	LZV849
DR 3800, DR 2800,	LZV646

Before starting the test:

DR 3900, DR 3800, DR 2800: Install the light shield in Cell Compartment #2 before performing this test.
Please read Safety Advice and Expiration Date on the reagent package.
Recommended sample and reagent temperature is 15–25 °C (59–77 °F).
Recommended sample pH is between 3–10.
Recommended reagent storage temperature is 15–25°C (59–77 °F).
TNTplus methods are activated directly from the Main Menu when the sample vial is inserted into the sample cell holder.

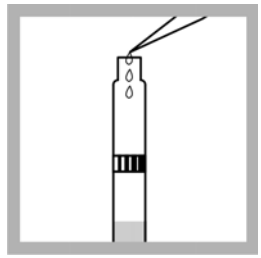
Collect the following items:

Description	Quantity
TNT 839 Reagent Set	1
Light Shield (see *Instrument-specific information*)	1
Pipet for 2.0 mL Sample	1
Pipet Tip	1

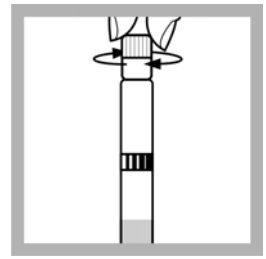
See *Consumables and replacement items* for reorder information.

Diazotization method, TNTplus 839

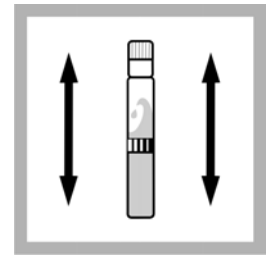
1. Carefully remove the protective foil lid from the DosiCap™ ***Zip***. Unscrew the cap from the vial.



2. Carefully pipet 2.0 mL of sample into the vial. Immediately proceed to step 3.



3. Flip the DosiCap ***Zip*** over so that the reagent side faces the vial. Screw the cap tightly onto the vial.



4. Shake the capped vial 2–3 times to dissolve the reagent in the cap.

Verify that the reagent has dissolved by looking down through the open end of the DosiCap ***Zip***.

5. Wait 10 minutes.

6. After 10 minutes, thoroughly clean the outside of the vial.

7. Insert the prepared vial into the cell holder. The instrument reads the barcode, then selects and performs the correct test. Results are in mg/L NO_2^-–N.

Refer to the user manual to show the results in the alternate chemical form.

Reagent blanks

A reagent blank can be measured and the value subtracted from the results of each test performed in same reagent lot. Use deionized water in place of sample in the *Diazotization method, TNTplus 839* test.

To subtract the value of the blank from a series of measurements:

1. Measure the blank per step 7.
2. Turn on the reagent blank option.
3. The measured value of the blank should be displayed in the highlighted box. Accept this value.

The reagent blank value will now be subtracted from all results until the function is turned off or a different method is selected. Alternately, the blank can be recorded and entered at any later time by pressing the highlighted box and using the keypad to enter the value.

Sample blanks

Color or turbid samples can cause high results. To compensate for color or turbidity the procedure is repeated without the addition of the color forming reagent that is present in the DosiCap ***Zip***.

To determine the sample blank:

1. Run the *Diazotization method, TNTplus 839* test, but do not remove the foil from the DosiCap ***Zip*** in step 1.
2. Replace the cap in its original position in step 3.
3. Subtract the value obtained in step 7 from the value obtained on the original sample to give the corrected sample concentration.

Samples without color or turbidity do not require sample blanks.

Interferences

The ions listed in the *Interfering substances* table have been individually tested up to the given concentrations and do not cause interference. The cumulative effects of these ions or the influence of other ions have not been determined.

Table 249 Interfering substances

Interfering substance	Interference level
Cl^-, SO_4^{2-}	2000 mg/L
K^+, NO_3^-	1000 mg/L
NH_4^+, PO_4^{3-}, Ca^{2+}	500 mg/L
Mg^{2+}	100 mg/L
Cr^{3+}	50 mg/L
Co^{2+}, Zn^{2+}, Cd^{2+}, Mn^{2+}, Hg^{2+}	25 mg/L
Ni^{2+}	12 mg/L
Ag^+, Fe^{2+}	10 mg/L
Sn^{4+}, Fe^{3+}	5 mg/L
Cu^{2+}	< 1 mg/L

Sample collection, preservation and storage

- Collect samples in clean plastic or glass bottles.
- Store at 4 °C (39 °F) or lower if the sample is to be analyzed within 24 to 48 hours.
- Warm to 15–25 °C (59–77 °F) before running the test.
- Do not use acid preservatives.

Accuracy check

Standard solution method

Note: *Refer to the instrument user manual for specific software navigation instructions.*

1. Preparing nitrite standards is difficult. Use the standard preparation instructions in *Standard Methods for the Examination of Water and Wastewater*, Method 4500—NO_2^-B. Prepare a 0.30-mg/L NO_2^-–N standard.
2. Use the 0.30-mg/L solution in place of the sample. Follow the *Diazotization method, TNTplus 839* test procedure.

Summary of method

Nitrite in the sample reacts with a primary aromatic amine in acidic solution to form a diazonium salt. This couples with an aromatic compound to form a colored complex that is directly proportional to the amount of nitrite present. Test results are measured at 515 nm.

Consumables and replacement items

Required reagents

Description	Quantity/Test	Unit	Catalog number
Nitrite, TNT 839 TNTplus™ Reagent Set	1	25/pkg	TNT839

Required apparatus

Description	Quantity	Unit	Catalog number
Pipet, variable volume, 1–5 mL	1	each	BBP065
Pipet Tips, for BBP065 Pipet	1	75/pkg	BBP068

Recommended standards and apparatus

Description	Unit	Catalog number
Balance, analytical, 80 g capacity	each	2936701
Handbook, Standard Methods for the Examination of Water and Wastewater	each	2270800
Sodium Nitrite, ACS	454 g	245201
Water, deionized	4 L	27256

Optional reagents and apparatus

Description	Unit	Catalog number
Bottle, sampling, low density poly, w/cap, 500 mL	12/pkg	2087079
Test Tube Rack for 13-mm vials	each	2497900

FOR TECHNICAL ASSISTANCE, PRICE INFORMATION AND ORDERING:
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HACH COMPANY
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