

# LOW RANGE NITRATE TEST KIT

0-1 and 0-10 mg/L as Nitrate Nitrogen

Model NI-14

Cat. No. 14161-00

The HACH logo is centered within a white oval, which is itself centered on a thick black horizontal band. The word "HACH" is written in a bold, italicized, sans-serif font.

TO ENSURE ACCURATE RESULTS PLEASE READ CAREFULLY BEFORE PROCEEDING. If nitrite is present, pretreatment of the sample is necessary prior to conducting the nitrate test. This will ensure consistent results expressed as total nitrate nitrogen. The pretreatment package, Pretreatment Kit, Model PT-1, is not included in this kit but may be ordered from Hach Company. *See Replacements.*

Chloride will act as an interferent with this procedure. If you wish to analyze for nitrate in saltwater, please refer to the Salt Water Master Test Kit (Cat. No. 20686-00)

For best results, this test should be performed with a sample temperature of 20-25°C (69-77°F).

***WARNING: The chemical in this kit may be hazardous to the health and safety of the user if inappropriately handled. Please read all warnings before performing the tests and use appropriate safety equipment.***

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## **NITRATE NITROGEN (0-1 mg/L)**

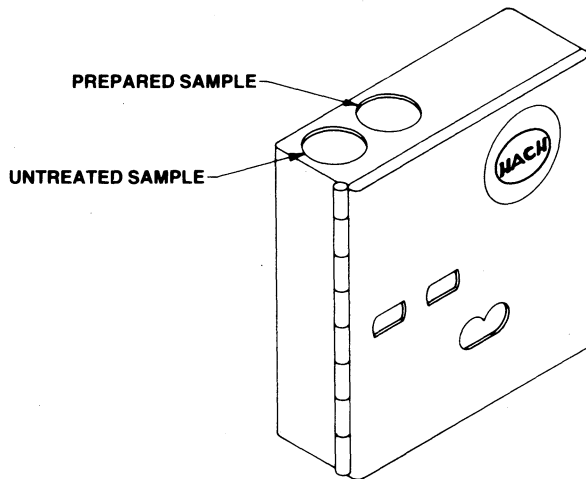
1. Fill one of the color viewing tubes to the mark with the sample to be tested. Stopper the tube and shake vigorously. Empty the tube and repeat this procedure.
2. Fill the color viewing tube to the mark with the sample (if nitrite is not present) or with the pretreated sample (if nitrite is present).
3. Use the clippers to open one NitraVer® 6 Nitrate Reagent Powder Pillow. Add the contents of the pillow to the sample to be tested. Stopper the tube and shake for three minutes. Allow the sample to stand undisturbed for an additional 30 seconds. Unoxidized particles of cadmium metal will remain in the sample and settle to the bottom of the viewing tube.
4. Pour the prepared sample into a second color viewing tube carefully so that the cadmium particles remain in the first tube.
5. Use the clippers to open one NitraVer® 3 Nitrite Reagent Powder Pillow. Add the contents of the pillow to the sample. Stopper the tube and shake for 30 seconds. A red color will develop if nitrate is present. Allow at least 10 minutes, but not more than 20 minutes, before completing Steps 6 through 8.
6. Insert the tube of prepared sample into the right top opening of the color comparator (Prepared Sample Position in Figure 1).
7. Rinse the unoxidized cadmium metal from the color viewing tube used in Step 2. Fill to the mark with the original water sample and place in the left top opening of the comparator (Untreated Sample Position in Figure 1).
8. Hold the comparator up to a light source such as the sky, a window or lamp and view through the openings in front. Rotate the disc to obtain a color match. Read the mg/L nitrate nitrogen (N) through the scale window. To obtain the results as mg/L nitrate ( $\text{NO}_3$ ) multiply the reading on the scale by 4.4.

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**Figure 1.**

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## **NITRATE NITROGEN (0-10 mg/L)**

1. Fill one of the color viewing tubes to the mark with demineralized water. Stopper the tube and shake vigorously. Empty the tube and repeat this procedure.
2. Rinse the plastic dropper with the sample or with the pretreated sample. Fill to the 0.5-mL mark. Add contents of the dropper to the rinsed color viewing tube.
3. Fill the color viewing tube to the mark with demineralized water.
4. Use the clippers to open one NitraVer 6 Nitrate Reagent Powder Pillow. Add the contents of the pillow to the sample to be tested. Stopper the tube and shake for three minutes. Allow the sample to stand undisturbed for an additional 30 seconds. Unoxidized particles of cadmium metal will remain in the sample and settle to the bottom of the viewing tube.
5. Pour the prepared sample into a second color viewing tube carefully so that the cadmium particles remain in the first tube.
6. Use the clippers to open one NitraVer 3 Nitrite Reagent Powder Pillow. Add the contents of the pillow to the sample. Stopper the tube and shake for 30 seconds. A red color will develop if nitrate is present. Allow at least 10 minutes, but not more than 20 minutes, before completing Steps 7 through 9.
7. Insert the tube containing the prepared sample into the right top opening of the color comparator (Prepared Sample Position in Figure 1).

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8. Rinse the unoxidized cadmium from the color viewing tube used in Step 2. Fill to the mark with the original water sample. Place this tube in the left top opening of the comparator (Untreated Sample Position in Figure 1).
9. Hold the comparator up to a light source such as the sky, a window or lamp and view through the openings in front. Rotate the disc to obtain a color match. Read the mg/L nitrate nitrogen (N) through the scale window. Multiply that reading by 10 to obtain the mg/L nitrate nitrogen (N) present in the sample. To obtain the results as mg/L nitrate ( $\text{NO}_3$ ) multiply the mg/L nitrate nitrogen (N) by 4.4.

The results obtained in the nitrate tests above are actually the sum of both the nitrate and nitrite nitrogen present in the sample. If the amount of nitrite nitrogen is considerable, it may be determined separately using the following procedure.

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1. Rinse a color viewing tube and stopper several times with the water to be tested. Fill the tube to the mark with the water sample.
2. Use the clippers to open one NitriVer 3 Nitrite Reagent Powder Pillow. Add the contents of the pillow to the sample. Stopper the tube and shake for 30 seconds. Allow at least 10 minutes, but not more than 15 minutes, for proper color development.
3. Insert the tube containing the prepared sample into the right top opening of the comparator (Prepared Sample Position in Figure 1).
4. Fill a second viewing tube to the mark with the original water sample. Insert this tube into the left top opening of the comparator (Untreated Sample Position in Figure 1).
5. Hold the comparator up to a light source such as the sky, a window or lamp and view through the openings in front. Rotate the disc to obtain a color match. Multiply the scale reading by 0.53 to obtain the mg/L nitrite nitrogen (N).
6. Subtract the mg/L nitrite nitrogen (N) from the total mg/L nitrate nitrogen (N) value to obtain the exact mg/L nitrate nitrogen present in the sample.

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## REPLACEMENTS

Cat. No.	Description	Unit	Cat. No.	Description	Unit
14120-99	NitraVer 6 Nitrate Reagent Powder Pillows . . . . .	pk/100	2118-02	Rubber Stopper . . . . .	pk/12
14078-99	NitriVer 3 Nitrite Reagent Powder Pillows . . . . .	pk/100	272-28	Demineralized Water (not included in kit) . . . . .	118 mL (4 oz)
936-00	Clippers . . . . .	each	2268-00	Pretreatment Kit, Model PT-1 (not included in kit)	each
1732-00	Color Comparator . . . . .	each			
14171-00	Color Disc (Low Range Nitrate Nitrogen) . . . . .	each			
1730-00	Color Viewing Tube . . . . .	each			
14197-00	Dropper, 0.5 and 1.0-mL marks . . . . .	each			

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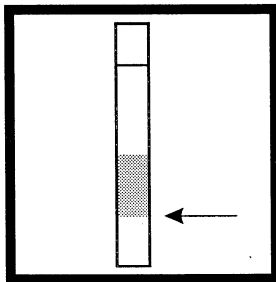
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**NI - 14 Test Kit**  
**0 - 1 and 0 - 10 mg/L as Nitrate Nitrogen**  
**Cat. No. 14161-00**

Use the 5 mL mark, the lowest mark on tubes and as indicated in the drawing, for all tests.



Clippers are no longer included in the kit since they are not needed to open foil powder pillows. To open foil powder pillows, first tap the bottom of the foil packets on a counter or other horizontal surface then tear the top of the packet open along the tear line. Push the sides of the packet inward to open. Pour reagent from the powder pillow into sample in tubes as instructed in kit instructions.

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