How to use…

Nitrate Nitrogen Kit (Hach Model NI-14)

INSTRUCTION SHEET

Test Location – Field or Laboratory

If the water sample is taken back to the laboratory or classroom, the nitrate nitrogen test should be conducted within 24 hours for best results.

Testing Background

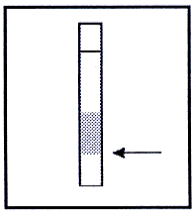
Which range to use? This test kit has two ranges that can be tested: low range (0-1 mg/L) or high range (1-10 mg/L). In most cases, all schools will use the low range test. If the results of this test using the low range instructions are 1 mg/L or greater, you will need to do the high range test for a more accurate result. Below are instructions for both the low range test (0-1 mg/L) and the high range test (1-10 mg/L).

Materials

NitraVer 6 Nitrate Powder Pillow
NitraVer 3 Nitrite Powder Pillow
3 test tubes with stoppers
black comparator box with red shaded color disc
distilled, demineralized or deionized water (for high range test)
dropper (for high range test)

Testing Instructions - Low Range Test (0-1 mg/L of nitrates) - START WITH THIS RANGE

1. Rinse each of the test tubes twice with the water sample to be tested by stoppering the tube and shaking vigorously. After rinsed, fill the tube to the bottom mark or line (5 mL) with the water sample.



2. Add the contents of one NitraVer 6 Nitrate Reagent Powder Pillow to both the A & B samples. Stopper the tubes and shake for three minutes. Then allow the samples to stand undisturbed for 30 seconds. Unoxidized particles of cadmium metal may form; if they do, they will remain in the sample and settle to the bottom of the tube. If no particles form – skip to step 5.

3. If cadmium particles are present, pour the prepared sample into a second viewing tube carefully so that the cadmium particles remain in the first tube. It is okay if a few drops of water containing the cadmium are left over in the first tube.

4. Rinse out the leftover cadmium metal particles from the bottom of the test tube from step 3, but place this waste in the specially marked cadmium waste container specified by your teacher. If no particles are on the bottom of the tube – then there is no hazardous cadmium waste = no need to put it in the special container.

5. Add the contents of one NitraVer 3 Nitrite Reagent Powder Pillow to the samples. Stopper the tubes and shake for 30 seconds. A reddish color will develop if nitrate is present. Allow the test tubes to sit for at least 10 minutes, but no longer than 20 minutes before using the color comparator (black box). While waiting, do the next two steps.

6. Fill a clean test tube to the 5 mL mark (bottom line on test tube) with some new, untreated water sample. Place this tube in the outermost opening of the color comparator. If not already done, insert the color disc into the comparator. The numbers should be readable through the open slit on the comparator.

7. After waiting 10 to 20 minutes, insert the prepared sample (possibly pink in color) into the centermost opening of the color comparator. Hold the comparator up to a light source (i.e. the sky, window, or lamp) and view through the openings in front. *Note: BOTH test tubes either have to be capped or uncapped, not one capped and one uncapped.* Rotate the disc to obtain a color match, then read the mg/L nitrate nitrogen (N) value through the scale window. Record this value on the data sheet. If this value was higher than 1 mg/L of nitrogen (N) or greater, the results are not accurate enough and proceed to the high range (1-10 mg/L nitrate, NO_3) test instructions.

Testing Instructions – High Range (1-10 mg/L of nitrates)
Requires distilled, demineralized, or deionized water and dropper (available in the Phosphates Kit –borrow them).

8. Rinse each test tube twice with demineralized water (Note: distilled water can be used).

9. Rinse the eye dropper with the water sample then fill to the 0.5 mL mark of the dropper with the water sample. Add the contents of the dropper to the test tube. Add demineralized (distilled) water to the test tube until the level reaches the bottom line (5mL). Do this for both the A & B samples.

**Now follow steps 2 through 6 above. Then proceed to Step 10 below.

10. After waiting 10 to 20 minutes, insert the prepared sample (possibly pink in color) into the centermost opening of the color comparator. Hold the comparator up to a light source and rotate the disc to obtain a color match. Read the value through the scale window and *multiply by 10* to obtain the mg/L nitrate nitrogen present in the sample. Record this value on the data sheet.

Disposal and Clean Up

If *cadmium* has been produced after adding NitraVer 6 Nitrate Reagent Powder Pillow to the water sample, this cadmium should be placed in a specially marked container. Cadmium is a metal that should not be dumped down a sink. Teachers can give Allegheny College their cadmium waste at the end of the school year. Do **not** store the waste in a beverage container.

The *other waste* from this test should be placed in a general waste container and taken back to the classroom and flushed down the sink with plenty of water. Rinse all glassware with distilled water.

Safety Precautions

The chemicals in this kit may be hazardous to the health and safety of the user if inappropriately handled. Please read all warnings on the packages before performing the test. Use appropriate safety equipment and normal safety precautions.

Test sheet was adapted from the HACH Company (Loveland, Colorado) Low Range Nitrate Test Kit Model NI-14.