Clean Water. Fertile Soil. Serious Science.
334 Hecla Street, Lake Linden, MI 49945 USA
Toll-free: 1.888.NITRATE Website: www.nitrate.com
Int'l phone: 1.906.296.1115 Tech Line: 1.906.296.1130
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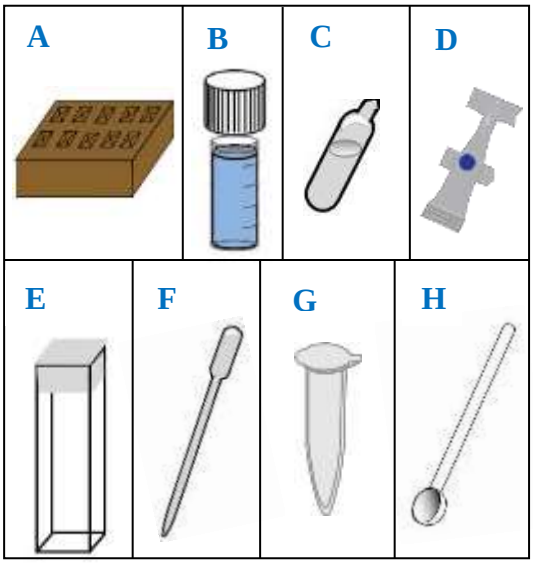
Previously Sold as S-NTK-200 Series SKU: NTK-S-(05, 10, 25, 50 depending on kit size)

Soil Nitrate Test Kit Instructions

Introduction

This kit contains everything needed to test soil samples for nitrate content. Provided in this kit is a ***25 ppm Nitrate-N* standard*** (**D**), to use as a reference tool for analyzing samples and to ensure that the kit is working properly. Download the free "Nitrate Color Slider" application, available on Google Play and iTunes App, for easy analysis of your samples on mobile devices. A color chart is also provided on the back of this instruction sheet for sample analysis. These kits are based on validated laboratory methods, and will provide nitrate results after 15-20 minutes. Although results are not as precise as a soil testing lab, *you will get accurate nitrate content results* for making preliminary decisions about nutrient application.

***Note: 25 ppm Nitrate-N equals 125 lb Nitrogen per acre**



Kit Contents (per 5 samples):

A. 1 cardboard cuvette holder
B. 5 clear collection tubes with white screw caps containing 5 mL water
C. 5 small squeeze bulbs (contains buffer)
D. 1 large squeeze bulb with blue dot (contains ***nitrate standard***)
E. 6 square reaction cuvettes in sealed foil pouch (contains enzyme)
F. 5 plastic pipettes (for transferring each sample to reaction cuvettes)
G. 6 snap-cap tubes of color reagent powder (in amber bag)
H. 1 large white measuring spoon (for adding soil to tubes [**B**])

Materials you will need:

- Marker for labeling tubes and cuvette caps
- Scissors (to remove tip from *snip off* squeeze bulb)
- Pen (for recording data on data sheet)

DO:
✓ Store this kit in a cool and dark place (below 72°F/22°C), refrigerate if possible
✓ Follow soil sampling advice from a Certified Crop Advisor. Recommended soil sampling rate is one sample per acre in each field. Drying soil samples to constant weight before testing will yield the best results. Contact NECi for more information.
✓ Run tests and standard all at once to ensure accuracy
✓ Label collected sample tubes and reaction cuvettes accordingly
✓ Gently shake cuvettes several times throughout reaction without inverting them
✓ Clarify samples by using a centrifuge, waiting for contents to settle, or using a coffee filter. Ask NECi for more information.
DO NOT:
×Open sealed packets or mix cuvette contents until ready to use
×Add more than *one drop* of sample water to reaction cuvette
×Compare samples to color chart before waiting at least 10 minutes
×Invert reaction cuvettes when mixing or get liquid in the cap portion before step 4

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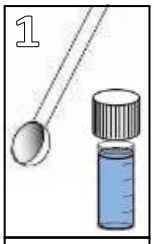
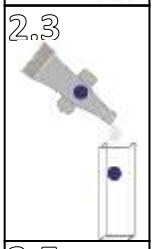
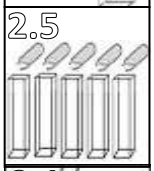
Procedure



Step 1 Sample Preparation

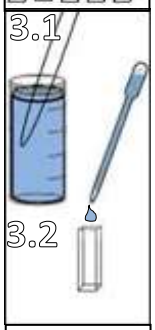
1) Collect and prepare soil samples. Use the large white spoon to collect one level scoop of soil.
2) Add the scoop of soil to one of the collection tubes filled with distilled water (white cap). (1) Recap the tube.
3) *Label the tube* and record the sample location on the data sheet. Repeat for each soil sample.
4) Shake each tube for approximately 1 minute. Set tube upright and allow soil to settle for 10 minutes*.
**If sample isn't clarified after 10 minutes, use a centrifuge or coffee filter. Common with clay and silt samples.*





Step 2 Preparing the Reaction Cuvettes

1) Remove the **6** square reaction cuvettes from the foil pouch and place them in the cardboard cuvette holder, *keeping the one with the blue dot separate from the others (this is your **nitrate standard**).*
2) Tap cuvettes to settle contents making sure to keep them *upright* to not lose contents.
3) Twist off the end of the squeeze bulb with the blue dot and empty the entire contents into the cuvette with the blue dot. This is the ***nitrate standard***. (2.3)
4) **Label the cuvette *caps*** with numbers, letters, or location. (1-5, A-E, etc.)
5) Into each of the other 5 cuvettes, empty entire contents of one buffer squeeze bulb. (2.5)
6) Cap all cuvettes and mix gently. Do not invert (keep liquid out of cap). *Step 3 must follow within 5 minutes.*



Step 3 Adding samples to Reaction Cuvettes

1) *Within 5 minutes*, pick up liquid from near the surface of your settled soil sample with a plastic pipette (3.1).
2) Transfer *only one drop* (approximately 50 µl) of this liquid to the corresponding cuvette (Sample 1 into cuvette 1, etc.) making sure not to touch the sides or surface of the liquid with the pipette. (3.2)
3) Repeat for the remaining 4 samples, *making sure to use a new pipette for each unique sample.*
4) Recap the cuvettes and mix by gently shaking side to side.
5) Let set for **at least 10 minutes**, mixing gently every few minutes.

Step 4 Color development

1) Tap each snap-cap tube to a hard surface to settle color reagent powder; open tubes.
2) Add color reagent powder *to all reaction cuvettes, including the **nitrate standard***. (4.1)
3) Firmly seal the cuvettes with square caps and vigorously mix each cuvette rapidly.
4) Let cuvettes develop color for about 5 minutes, mixing them several times to dissolve most of the powder. Some powder may settle to the bottom of tube; this is okay.

Step 5 Evaluating your results

After color development, compare your results within one hour using the ***nitrate standard*** and this chart or download NECi's free color slider application for mobile devices. The ***nitrate standard*** is set at 25 parts per million Nitrate-N (110 ppm Nitrate). Contact your local crop advisor for nutrient application advice.

*** *lbs per acre based on ~ 1 ft. depth, from Purdue U.*** ***http://www.kingcorn.org/news/timeless/AssessAvailableN.html***

Nitrate-N (ppm)	**0**	**10**	**25**	**50**
Nitrate (ppm)	**0**	**44**	**110**	**220**
N (lbs per acre)*	**0**	**50**	**125**	**250** (Same as N Credit)
Soil Fertility	**Low**	**OK**	**Optimal**	**High**

Download our free Nitrate Color Slider app available on Google Play and iTunes for easy color matching of your samples for data. Visit www.nitrate.com/mobile-apps on your mobile device's web browser, or search "Nitrate Color Slider" in the app store. Check out NECi's Handheld Photometer and app for digital data on your mobile device!