

## Nitrate Test Kit

The HI3874 is a colorimetric chemical test kit that determines the nitrate concentration in samples within a 0 to 50 mg/L (ppm) range as nitrate-nitrogen ( $\text{NO}_3^-$ -N). The HI3874 is supplied with all of the necessary reagents and equipment to perform the analysis. The test kit contains enough reagents to perform approximately 100 tests.

- **Complete setup**
  - All required materials are included with the test kit, such as the glass cuvette, color comparison cube, and reagent packets.
- **High resolution**
  - Readings from 0 to 50 mg/L are determined to 10 mg/L resolution.
- **Replacement reagents available**
  - There is no need to buy a new kit when reagents are exhausted. The HI3874-100 can be ordered to replace the reagents supplied with the kit.

### Significance of Use

Nitrogen is abundant in the Earth's atmosphere and is present in water in the form of nitrate, nitrite, and ammonia. Plants use nitrogen as a nutrient to build proteins by tracking it in through their root system. Nitrate is formed in water mainly through rainfall, decomposition of organic matter, and runoff from manmade pollutants such as sewage waste and fertilizers. Almost all surface waters have a measurable level of nitrate, and a moderate amount is considered beneficial. Large amounts of nitrate, however, can lead to eutrophication which may result in decreased levels of dissolved oxygen in the water.



Specifications	HI3874 Nitrate (as $\text{NO}_3^-$ -N)
Type	colorimetric
Range	0-50 mg/L (ppm)
Smallest Increment	10 mg/L (ppm)
Method	cadmium reduction
Number of Tests	100 avg.
<b>Ordering Information</b>	<b>HI3874</b> test kit comes with 100 packets nitrate reagent, glass cuvette and color comparison cube.
<b>Reagent</b>	<b>HI3874-100</b> nitrate (as $\text{NO}_3^-$ -N), 100 tests avg.

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## Nitrate Test Kit

for Soil and Irrigation Water

The Hanna HI38050 nitrate test kit for soil and irrigation water makes it possible to determine the need for nitrogen fertilization. It also obtains the best crop response and avoids over-fertilization.

Nitrate is reduced to nitrite in the presence of cadmium. The nitrite thus produced reacts with the reagent to yield an orange compound. The amount of color developed is proportional to the concentration of nitrate present in the aqueous sample.

The Hanna nitrate-nitrogen test can be performed the whole year round, but testing is particularly recommended during spring and late spring, when rainfall and temperature-related bursts of microbiological activity often have great influence on the availability of nitrate-nitrogen.



Specifications	HI38050 Nitrate (as $\text{NO}_3^-$ -N) in irrigation water and soil
Type	checker disc
Range	water: 0-50 mg/L (ppm) soil: 0-60 mg/L (ppm)
Smallest Increment	water: 1 mg/L (ppm) soil: 2 mg/L (ppm)
Method	cadmium reduction
Number of Tests	water: 100 avg. soil: 100 avg.
<b>Ordering Information</b>	<b>HI38050</b> test kit comes with 200 packets nitrogen reagent, checker disc, glass vials with caps (2), 10 g calcium sulfate, demineralizer bottle with filter cap for 12 L, soil sieve, 50 mL plastic test tube with screw cap, large funnel, 100 paper filter discs, brush, 50 mL calibrated vessels (2), 2 g sample cup, 3 mL plastic pipette and spoons (2).
<b>Reagent</b>	<b>HI38050-200</b> nitrate, soil and irrigation (as $\text{NO}_3^-$ -N), 200 tests avg.

HI3873

## Nitrite Test Kit

The HI3873 is a colorimetric chemical test kit that determines the nitrite concentration in samples within a 0.0 to 1.0 mg/L (ppm) range as nitrite-nitrogen ( $\text{NO}_2^-$ -N). The HI3873 is supplied with all of the necessary reagents and equipment to perform the analysis. The test kit contains enough reagents to perform approximately 100 tests.

- **Complete setup**
  - All required materials are included with the test kit, such as the glass cuvette, color comparison cube, and reagent packets.
- **High resolution**
  - Readings from 0.0 to 1.0 mg/L are determined to 0.2 mg/L resolution.
- **Replacement reagents available**
  - There is no need to buy a new kit when reagents are exhausted. The HI3873-100 can be ordered to replace the reagents supplied with the kit.

### Significance of Use

Nitrites can be harmful to aquatic organisms even in low concentrations and for this reason, they are closely monitored in aquaculture facilities. In cooling towers, however, an adequate amount of nitrites is necessary to prevent corrosion. In high concentrations, they can be harmful to the environment and to humans. They are, therefore, normally monitored to verify the quality of water for domestic use, as well as lakes and ponds.

Nitrites are an intermediate product in the nitrogen cycle and are produced by ammonia oxidation with water, or even originate in industrial waste directly. They must not be present in drinking water.



Specifications	HI3873 Nitrite (as $\text{NO}_2^-$ -N)
Type	colorimetric
Range	0.0-1.0 mg/L (ppm)
Smallest Increment	0.2 mg/L (ppm)
Method	chromotropic acid
Number of Tests	100 avg.
<b>Ordering Information</b>	<b>HI3873</b> test kit comes with 100 packets nitrite reagent, glass cuvette and color comparison cube.
<b>Reagent</b>	<b>HI3873-100</b> nitrite (as $\text{NO}_2^-$ -N), 100 tests avg.

HI3810

## Dissolved Oxygen Test Kit



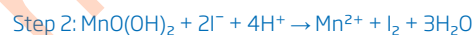
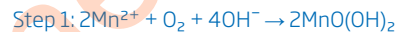
The HI3810 is a titration-based chemical test kit that determines the dissolved oxygen concentration within the 0 to 10 mg/L  $\text{O}_2$  range. The HI3810 is supplied with all of the necessary reagents and equipment to perform the analysis. The test kit contains enough reagents to perform approximately 110 tests.

- **Complete setup**
  - All required materials are included with the test kit, such as the glass stoppered bottle, indicator and reagent bottles, and calibrated syringe.
- **High resolution**
  - Readings from 0 to 10 mg/L are determined to 0.1 mg/L resolution.
- **Replacement reagents available**
  - There is no need to buy a new kit when reagents are exhausted. The HI3810-100 can be ordered to replace the reagents supplied with the kit.

### Significance of Use

The concentration of dissolved oxygen in water is extremely important in nature as well in man's environment. In oceans, lakes, rivers, and other surface water bodies, dissolved oxygen is essential to the growth and development of aquatic life. Without oxygen, water can become toxic due to the anaerobic decaying of organic matter. In man's environment, water must contain at least 2 mg/L of oxygen to protect water pipes from corrosion. However, boiler system water, in many cases, cannot contain greater than 10 mg/L oxygen.

A modified Winkler method is used in the HI3810 test kit. Manganous ions react with oxygen in the presence of potassium hydroxide to form a manganese oxide precipitate (Step 1). An azide is present to prevent any nitrite ions from interfering with the test. With addition of acid, manganese oxide hydroxide oxidizes the iodide to iodine (Step 2). Since the amount of iodine generated is equivalent to the oxygen in the sample, the concentration of iodine is calculated by titration of thiosulfate ions that reduce the iodine back to iodide ions (Step 3).



Specifications	HI3810 Dissolved Oxygen
Type	titration
Range	0.0-10.0 mg/L (ppm)
Smallest Increment	0.1 mg/L (ppm)
Method	modified Winkler
Number of Tests	110 avg.
<b>Ordering Information</b>	<b>HI3810</b> test kit comes with 30 mL manganous sulfate solution, 30 mL alkali-azide reagent, 60 mL sulfuric acid solution (2), 10 mL starch indicator, 120 mL titrant solution, glass bottle with stopper, 10 mL calibrated vessel and calibrated syringe with tip.
<b>Reagent</b>	<b>HI3810-100</b> dissolved oxygen, 100 tests avg.

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