

Methods

Nitrate is the most completely oxidized form of nitrogen. It is formed during the final stages of biological decomposition, either in wastewater treatment facilities or in natural water supplies. Low-level nitrate concentrations may be present in natural waters. However, a Maximum Contaminant Level of 10 ppm nitrate-nitrogen has been established for drinking water by the USEPA.

The Cadmium Reduction Method

References: ASTM D 3867-09, Nitrate-Nitrite in Water, Test Method B. APHA Standard Methods, 21st ed., Method 4500-NO₃⁻ E (2005). USEPA Methods for Chemical Analysis of Water and Wastes, Method 353.3 (1983).

Nitrate is reduced to nitrite using cadmium as the reducing agent. The resulting nitrite concentration is then determined colorimetrically. This method is applicable to drinking and surface waters, as well as domestic and industrial wastes. Nitrite will interfere with this test. Results are expressed as ppm (mg/L) NO₃-N or NO₃.

The Zinc Reduction Method

References: ASTM D 3867-09, Nitrate-Nitrite in Water, Test Method B. APHA Standard Methods, 21st ed., Method 4500-NO₃E (2005). USEPA Methods for Chemical Analysis of Water and Wastes, Method 353.3 (1983). Nelson, J.L., Kurtz, L.T., and R.H. Bray, "Rapid Determination of Nitrates and Nitrites", *Anal. Chem.*, V26, p. 1081-1082, (1954).

Nitrate is reduced to nitrite using zinc as the reducing agent. The resulting nitrate concentration is then determined colorimetrically. This method is applicable to industrial wastewaters, drinking, and surface waters. **These test kits can also be used for the analysis of seawater.** This method will measure nitrate in the presence of low levels of nitrite (by difference). Results are expressed as ppm (mg/L) NO₃-N.



Range: 0-3 ppm as N MDL: 0.25 ppm / Method: Zinc Reduction	
CHEMets Kit	Cat# K-6905
CHEMets Refill, 30 ampoules and 30 zinc foil packs, Shelf-life 12 months	R-6905
Acidifier Solution Pack, six 20 mL bottles	A-6901 ¹
Comparator, Shelf-life 12 months 0, 0.25, 0.5, 0.75, 1.0, 1.5, 2.0, 2.5, 3.0 ppm	C-6906
Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Comparator, Acidifier Solution, reaction tube and cap, 25 mL sample cup, instructions, and MSDS.	

Range: 0-3 ppm as N MDL: 0.4 ppm / Method: Cadmium Reduction	
CHEMets Kit	Cat# K-6904
CHEMets Refill, 30 ampoules and 30 cadmium foil packs, Shelf-life 12 months	R-6902
Comparator, Shelf-life 12 months 0, 0.4, 0.6, 0.8, 1.0, 1.2, 1.5, 2.0, 3.0 ppm	C-6904
Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Comparator, 25 mL sample cup, reaction tube with cap, instructions, and MSDS.	

Range: 0-30 ppm as N MDL: 4 ppm / Method: Cadmium Reduction	
CHEMets Kit	Cat# K-6909D
CHEMets Refill, 30 ampoules and 30 cadmium foil packs, Shelf-life 12 months	R-6904
Comparator, Shelf-life 12 months 0, 4, 6, 8, 10, 12, 15, 20, 30 ppm	C-6909D
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Comparator, 25 mL sample cup, 3.0 mL syringe, reaction tube with cap, instructions, and MSDS.	

Range: 0-150 ppm as N MDL: 20 ppm / Method: Cadmium Reduction	
CHEMets Kit	Cat# K-6909A
CHEMets Refill, 30 ampoules and 30 cadmium foil packs, Shelf-life 12 months	R-6904
Comparator, Shelf-life 12 months 0, 20, 30, 40, 50, 60, 75, 100, 150 ppm	C-6909A
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Comparator, 25 mL sample cup, 1.0 mL syringe, reaction tube with cap, instructions, and MSDS.	

Range: 0-450 ppm as N MDL: 60 ppm / Method: Cadmium Reduction	
CHEMets Kit	Cat# K-6909B
CHEMets Refill, 30 ampoules and 30 cadmium foil packs, and 30 pipette tips, Shelf-life 12 months	R-6909
Comparator, Shelf-life 12 months 0, 60, 90, 120, 150, 180, 225, 300, 450 ppm	C-6909B
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Comparator, 25 mL sample cup, 100 uL MiniPet [®] , reaction tube with cap, instructions, and MSDS.	

Range: 0-1800 ppm as N MDL: 240 ppm / Method: Cadmium Reduction	
CHEMets Kit	Cat# K-6909C
CHEMets Refill, 30 ampoules, 30 cadmium foil packs, and 30 pipette tips, Shelf-life 12 months	R-6909
Comparator, Shelf-life 12 months 0, 240, 360, 480, 600, 720, 900, 1200, 1800 ppm	C-6909C
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Comparator, 25 mL sample cup, 25 uL MiniPet [®] , reaction tube with cap, instructions, and MSDS.	

MiniPet[®] is a registered trademark of Tricontinent Scientific, Inc.

 Instrumental Kits

V-2000 Multi-Analyte Photometer

(See page 14 for instrumental features)

Range: 0.10-1.00 ppm as N

Method: Zinc Reduction

Cat#

Vacu-vials Kit, Shelf-life 12 months

K-6913

Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules, thirty zinc foil packs, Acidifier Solution, reaction tube and cap, 25 mL sample cup, ampoule blank, instructions, and MSDS.

Range: 0.20-1.50 ppm as N

Method: Cadmium Reduction

Cat#

Vacu-vials Kit, Shelf-life 12 months

K-6903

Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules, thirty cadmium foil packs, 25 mL sample cup, reaction tube with lid, ampoule blank, instructions, and MSDS.

Range: 0.40-3.00 ppm as N

Method: Cadmium Reduction

Cat#

Vacu-vials Kit, Shelf-life 12 months

K-6923

Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules, thirty cadmium foil packs, 25 mL sample cup, reaction tube with lid, ampoule blank, instructions, and MSDS.

Vacu-vials Kits require the use of the V-2000 Photometer or a spectrophotometer capable of accepting a 13 mm diameter round cell. Instrument sold separately.

Range: 5.0-50.0 ppm as NO₃

Method: Cadmium Reduction

Cat#

Vacu-vials Kit, Shelf-life 12 months

K-6933

Kit comes in a cardboard box and contains everything needed to perform 30 tests (except distilled water): thirty ampoules, thirty cadmium foil packs, 25 mL sample cup, 3.0 mL syringe, reaction tube with lid, ampoule blank, instructions, and MSDS.

Kit Components common to Nitrate

Description

Cat#

Sample Cup Pack, 25 mL (6 ea)	A-0013
Ampoule Blank Pack (5 ea)	A-0023
Syringe Pack, 1.0 mL (6 ea)	A-0027
Syringe Pack, 3.0 mL (6 ea)	A-0063
MiniPet®, 100 µL (1 ea)	A-0170
Pipette Tips Pack (30 ea)	A-0171
Reaction Tube Pack, (6 ea)	A-0187
MiniPet®, 25 µL (1 ea)	A-0191

¹The accessory pack supplies enough solution to perform at least 200 tests.

Instructions and MSDS(s) are posted on our website.

If no shelf-life is listed for a product, then the shelf-life is at least 2 years.

