

Ammonia

Methods

Low-level ammonia nitrogen may be naturally present in water as a result of the biological decay of plant and animal matter. Higher concentrations in surface waters can indicate contamination from waste treatment facilities, raw sewage, industrial effluents (particularly from petroleum refineries), or fertilizer runoff. Excessive ammonia concentrations are toxic to aquatic life.

The Direct Nesslerization Method

References: ASTM D 1426-08, Ammonia Nitrogen in Water, Test Method A. APHA Standard Methods, 18th ed., Method 4500-NH₃ C-1988.

The test kits employing the well-established Nessler reagent* to determine ammonia concentrations are applicable to drinking water, clean surface water, good-quality nitrified wastewater effluent, and seawater**.

In some waters, calcium and magnesium concentrations can cause cloudiness of the reagent. Adding a few drops of stabilizer solution (Rochelle Salt) will prevent this cloudiness. References recommend distilling samples prior to analysis. Results are expressed as ppm (mg/L) ammonia-nitrogen, NH₃-N.

Shelf life: although the Nessler reagent is stable, its high alkali content attacks the glass ampoule. The resulting precipitate interferes with color comparison. We recommend stocking quantities of CHEMets and VACUettes ampoules that will be used within 5 months. A 2-month supply of Vacu-vials ampoules is suggested. **Refrigeration will dramatically extend the shelf life of these products.**

**** Seawater analysis requires A-1501 Stabilizer Solution (sold separately).**

The Hydroxybenzyl Alcohol (HBA) Method

References: Krom, Michael D., Spectrophotometric Determination of Ammonia: A Study of a Modified Berthelot Reduction Using Salicylate and Dichloroisocyanurate, *The Analyst*, V105, pp. 305-316, 1980.

In the ammonia test method that employs the hydroxybenzyl alcohol chemistry, free ammonia reacts with hypochlorite to form monochloramine. Monochloramine reacts with HBA, in the presence of sodium nitro-ferricyanide, to form a green-colored complex.

This test method measures the sum of free ammonia and monochloramine. Results are expressed in ppm (mg/L) ammonia nitrogen, NH₃-N. The HBA Method offers similar sensitivity to the Nesslerization Method and there is no generation of mercury-containing waste.

Visual Kits

Range: 0-1 & 1-10 ppm
MDL: 0.05 ppm / Method: Direct Nesslerization

CHEMets Kit	Cat#
CHEMets Refill, 30 ampoules, Shelf life 5 months	*R-1501 ²
Stabilizer Solution Pack, six 10 mL bottles	A-1500 ¹
Low Range Comparator 0, 0.1, 0.2, 0.3, 0.4, 0.6, 0.8, 1.0 ppm	C-1501
High Range Comparator 1, 2, 3, 4, 5, 6, 7, 8, 10 ppm	C-1510
Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Low and High Range Comparators, Stabilizer Solution, 25 mL sample cup, and instructions.	

Range: 0-4 & 0-80 ppm
MDL: 0.125 ppm/ Method: Hydroxybenzyl Alcohol (HBA)

CHEMets Kit	Cat#
CHEMets Refill, 30 ampoules	R-1402
Activator Solution Pack, Shelf life 8 months	A-1410 ³
A-1404 Stabilizer Solution, two 10 mL bottles	
A-1405 Catalyzer Solution, two 10 mL bottles	
A-1406 Activator Solution, two 10 mL bottles	
Dual Range Comparator 0, 0.25, 0.50, 0.75, 1.0, 1.5, 2.0, 3.0, 4.0 ppm 0, 5, 10, 15, 20, 30, 40, 60, 80 ppm	C-1404
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Comparator, Stabilizer Solution, Catalyzer Solution, Activator Solution, 25 mL sample cup, 3 mL syringe, and instructions.	


Range: 0-30 & 30-300 ppm
MDL: 5 ppm / Method: Direct Nesslerization

VACUettes Kit	Cat#
VACUettes Refill, 30 ampoules, Shelf life 5 months	*R-1501D ²
Low Range Comparator 0, 5, 7.5, 10, 15, 20, 25, 30 ppm	C-1501D
High Range Comparator 30, 60, 90, 120, 150, 175, 200, 250, 300 ppm	C-1510D
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, dilutor snapper cup, micro test tube and instructions.	

Range: 0-60 & 60-600 ppm
MDL: 10 ppm / Method: Direct Nesslerization

VACUettes Kit	Cat#
VACUettes Refill, 30 ampoules, Shelf life 5 months	*R-1501A ²
Low Range Comparator 0, 10, 15, 20, 30, 40, 50, 60 ppm	C-1501A
High Range Comparator 60, 120, 180, 240, 300, 350, 400, 500, 600 ppm	C-1510A
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, dilutor snapper cup, micro test tube and instructions.	

*Contains mercury. Dispose according to local, state or federal laws.

 **WARNING!** The products employing the Direct Nesslerization method can expose you to chemicals including mercury, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.



Instrumental Kits

Multi-Analyte Photometers
V-2000 / V-3000
 (See page 14 for instrumental features)

Range: 0-7.00 ppm
Method: Direct Nesslerization

	Cat#
Vacu-vials Kit , Shelf life 2 months	*K-1503²

Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules, Stabilizer Solution, 25 mL sample cup, ampoule blank, and instructions.

Range: 0-14.0 ppm
Method: Direct Nesslerization

	Cat#
Vacu-vials Kit , Shelf life 2 months	*K-1523²

Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules, Stabilizer Solution, 25 mL sample cup, ampoule blank, and instructions.

Range: 0-3.00 & 0-60.0 ppm
Method: Hydroxybenzyl Alcohol (HBA)

	Cat#
Vacu-vials Kit , Shelf life 8 months	K-1413

Kit comes in a cardboard box and contains everything needed to perform 30 tests (except distilled water): thirty ampoules, Stabilizer Solution, Catalyzer Solution, Activator Solution, 25 mL sample cup, 3 mL syringe, ampoule blank and instructions.

Vacu-vials Kits require the use of a CHEMetrics Direct-Readout Photometer (photometers sold separately) or a spectrophotometer capable of accepting a 13 mm diameter round cell. See page 14 for details.

Components and Accessories

Description	Cat#
Sample Cup Pack, 25 mL (6 ea)	A-0013
Sample Cup Top Pack (6 ea)	A-0014
Micro Test Tube Pack (10 ea)	A-0015
Dilutor Snapper Cup Pack (6 ea)	A-0018
Ampoule Blank Pack (5 ea)	A-0023
** Sample Zeroing Accessory Pack	A-0025
Syringe Pack, 1.0 mL (6 ea)	A-0027
Syringe Pack, 3.0 mL (6 ea)	A-0063
** Sample Zeroing Accessory Pack	A-0503
** Sample Zeroing Accessory Pack	A-0504

*Contains mercury. Dispose according to local, state or federal laws.
 ** For use when testing colored or turbid samples. See page 13 for details.

- The accessory pack supplies enough solution to perform at least 200 tests.
- Shelf life is based on storage at room temperature and in the dark. This shelf life can be extended by 18 months if the ampoules are stored in the refrigerator when not in use.
- The A-1410 Accessory Solution Pack supplies enough Ammonia Activator, Catalyzer, and Stabilizer Solutions to perform approximately 80 tests. An accessory solution contained in this pack has a shelf life of 8 months. (Test kits contain one bottle of each solution.)

Instructions and SDSs are posted on our website.
 If no shelf life is listed for a product, then the shelf life is at least 1 year.

WARNING! The products employing the Direct Nesslerization method can expose you to chemicals including mercury, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Range: 0-120 & 120-1200 ppm
MDL: 20 ppm / Method: Direct Nesslerization

	Cat#
VACUettes Kit	*K-1510B

VACUettes Refill, 30 ampoules, Shelf life 5 months	*R-1501B ²
Low Range Comparator 0, 20, 30, 40, 60, 80, 100, 120 ppm	C-1501B
High Range Comparator 120, 240, 360, 480, 600, 700, 800, 1000, 1200 ppm	C-1510B

Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, dilutor snapper cup, micro test tube and instructions.

Range 0-1000 & 1000-10,000 ppm
MDL: 100 ppm / Method: Direct Nesslerization

	Cat#
VACUettes Kit	*K-1510C

VACUettes Refill, 30 ampoules, Shelf life 5 months	*R-1501C ²
Low Range Comparator 0, 100, 200, 300, 400, 600, 800, 1000 ppm	C-1501C
High Range Comparator 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 10,000 ppm	C-1510C

Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, dilutor snapper cup, micro test tube and instructions.

Range: 0-125 & 0-2500 ppm
MDL: 8 ppm / Method: Hydroxybenzyl Alcohol (HBA)

	Cat#
VACUettes Kit	K-1420D

VACUettes Refill, 30 ampoules	R-1402D
Activator Solution Pack, Shelf life 8 months	A-1410 ³
A-1404 Stabilizer Solution, two 10 mL bottles	
A-1405 Catalyzer Solution, two 10 mL bottles	
A-1406 Activator Solution, two 10 mL bottles	
Dual Range Comparator 0, 8, 15, 25, 35, 50, 70, 100, 125 ppm	C-1404D
0, 160, 300, 500, 700, 1000, 1400, 2000, 2500 ppm	

Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Comparator, Stabilizer Solution, Catalyzer Solution, Activator Solution, 25 mL sample cup, 3 mL syringe, dilutor snapper cup, sample cup top, micro test tube and instructions.

Range: 0-500 & 0-10,000 ppm
MDL: 30 ppm / Method: Hydroxybenzyl Alcohol (HBA)

	Cat#
VACUettes Kit	K-1420B

VACUettes Refill, 30 ampoules	R-1402B
Activator Solution Pack, Shelf life 8 months	A-1410 ³
A-1404 Stabilizer Solution, two 10 mL bottles	
A-1405 Catalyzer Solution, two 10 mL bottles	
A-1406 Activator Solution, two 10 mL bottles	
Dual Range Comparator 0, 30, 60, 100, 150, 225, 300, 400, 500 ppm	C-1404B
0, 600, 1200, 2000, 3000, 4500, 6000, 8000, 10,000 ppm	

Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Comparator, Stabilizer Solution, Catalyzer Solution, Activator Solution, 25 mL sample cup, 3 mL syringe, dilutor snapper cup, sample cup top, micro test tube and instructions.