



Technical Data Sheet

Ammonia

Direct Nesslerization Method

Applications and Industries: Drinking water, clean surface water, good-quality nitrified wastewater effluent, seawater

References: ASTM D 1426-03, Ammonia Nitrogen in Water, Test Method A. APHA Standard Methods, 18th ed., Method 4500-NH₃ C (1992).

Chemistry: In a strongly alkaline solution, ammonia reacts with Nessler's Reagent (K₂Hgl₄) to produce a yellow-colored complex in direct proportion to the ammonia concentration. Results are expressed in ppm (mg/L) ammonia-nitrogen (NH₃-N).

Interference Information: This chemistry will measure soluble ammonia (NH₃, NH₄⁺), but not ammonia attached to large organic molecules. The method will measure chloramines, which are formed when chlorine reacts with ammonia in solution.

Addition of extra stabilizer solution to the sample prior to analysis makes this chemistry applicable for the analysis of natural seawater and some synthetic seawaters. Other synthetic seawaters may cause the reagent to precipitate, causing erroneous results. Other types of samples may require a preliminary distillation to remove interferences. If distillation is not an option, dilution of the sample prior to analysis can help to minimize many interferences.

Residual free chlorine may interfere with this chemistry by giving low test results or by forming a black precipitate. Hydrazine at low levels will cause a slight positive interference, and at higher levels will form an orange or yellow precipitate. Glycine will cause high test results. Aromatic and aliphatic amines (including cyclohexylamine and morpholine) may cause a slight positive interference, or may cause the reagent to precipitate. MDEA at up to 100 ppm does not read positively, but does cause the reagent to precipitate. DEHA at up to 1.5 ppm does not interfere. Ketones, alcohols, and aldehydes may cause off-color test results. Iron and sulfide may cause the reagent to precipitate. High levels of calcium, magnesium, and other dissolved solids may also cause the reagent to precipitate; however, addition of the kits' stabilizer solution to samples will help to minimize these interferences. Chloride at concentrations up to approximately 2% will not interfere. Nitrite at up to approximately 200 ppm as N does not interfere.

Safety Information: Material Safety Data Sheets (MSDSs) are included with the test kits and are available upon request and on our website. Read MSDS before using these kits. Breaking the tip of an ampoule in air rather than water may cause the glass ampoule to shatter. Wear eye protection.

Available Analysis Systems: Visual colorimetric: CHEMets®, VACUettes®. Instrumental colorimetric: Vacu-vials®.

Storage Requirements: Products should be stored in the dark and at room temperature. CHEMets, VACUettes, and Vacu-vials ampoules can be stored in the refrigerator to extend shelf life.

Shelf Life: Visual colorimetric: CHEMets and VACUettes refills have 5-month shelf lives. These shelf lives can be extended by 18 months if the refills are refrigerated when not in use. The color comparators and accessory solutions have 2-year shelf lives. Instrumental colorimetric: The Vacu-vials kits have shelf lives of 2 months. These shelf lives can be extended by 18 months if the ampoules are refrigerated when not in use.

Accuracy: CHEMets: ± ½ color standard increment; VACUettes: ± 1 color standard increment; Vacu-vials: ± 10% error at 75% of full range, ± 20% error at 25% of full range, ± 30% error at CHEMetrics' Practical Detection Limit (PDL).

NOTE: These products contain mercury and must be disposed according to local, state and federal laws.

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