



Technical Data Sheet

Nitrate

Cadmium Reduction Method

Applications and Industries: Industrial wastewater influent and effluent, industrial process waters, boiler water, cooling water, surface and ground water, potable water. **Not** applicable for seawater.

References: APHA Standard Methods, 22nd ed., Method 4500-NO₃⁻ E - 2000. ASTM D 3867-09, Nitrate-Nitrite in Water, Test Method B. USEPA Methods for Chemical Analysis of Water and Wastes, Method 353.3 (1983).

Chemistry: Nitrate is reduced to nitrite with cadmium. In an acidic solution, the nitrite diazotizes with a primary aromatic amine and then couples with another organic molecule to produce a highly colored azo dye. The resulting pink-orange color is proportional to the nitrate concentration. Results are expressed as ppm (mg/L) NO₃-N or NO₃. To convert results from ppm NO₃-N to ppm NO₃, multiply by 4.43.

Interference Information:

Iron, copper and other metals, oil and grease, chloride at concentrations >2,000 ppm, high levels of chlorine and other halogens, and sample turbidity will decrease the efficiency of the cadmium reduction step, causing low test results. Interferences from some metals may be minimized by treatment of the sample with EDTA solution. Turbid samples can be filtered prior to analysis.

Thiosulfate causes low test results.

Nitrite interferes by reading positively with the test and by decreasing the efficiency of the cadmium reduction step. Test results will be biased high when nitrite is present at detectable levels.

Some fertilizers may produce a pale orange color with the reagent.

The sample pH should be between 5 and 9 for most efficient cadmium reduction.

Low test results are obtained with seawater.

Safety Information: Safety Data Sheets (SDS) are available upon request and at www.chemetrics.com. Read SDS before using these products. Breaking the tip of an ampoule in air rather than water may cause the glass ampoule to shatter. Wear safety glasses and protective gloves.

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

Storage Requirements: Products should be stored in the dark and at room temperature.

Shelf Life: *When stored in the dark and at room temperature:* Visual colorimetric: The CHEMets refills and the color comparators have 12-month shelf lives. Instrumental colorimetric: The Vacu-vials kits have shelf lives of 12 months.

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

NOTE: Test procedures must be followed **exactly** as written; otherwise, accuracy will be compromised.

CHEMetrics, Inc., 4295 Catlett Road, Midland, VA 22728, www.chemetrics.com
ph: 800-356-3072 or 540-788-9026, fax: (540) 788-4856, email: technical@chemetrics.com