Technical Data Sheet

Copper

Bathocuproine Method

Applications and Industries: Drinking water, groundwater, surface waters, domestic and industrial wastewaters, seawater

References: APHA Standard Methods, 21st ed., Method 3500-Cu C (2005).

Chemistry: In a neutral solution, cupric copper is reduced to cuprous with sodium bisulfite. Cuprous ions react with bathocuproine (2,9-dimethyl-4,7-diphenyl-1,10-phenanthrolinedisulfonic acid, disodium salt) to form an orange colored chelate in direct proportion to the copper concentration. Results are expressed in ppm (mg/L) Cu.

Interference Information: This chemistry measures fully ionized solubilized copper. It does not measure suspended, insoluble particulate copper, copper attached to large organic molecules, or chelated copper. EDTA and cyanide will interfere by forming complexes with copper, causing low test results. Thiocyanate may also interfere. Persulfate does not interfere at levels up to 10,000 ppm. Nitrite up to 5000 ppm does not interfere. The reagent is applicable to the analysis of seawater. The color development time should be decreased to 1 minute (rather than 2 minutes) in order to minimize formation of a precipitate in the test ampoule during seawater analysis. This reagent may precipitate with time. However, the precipitate typically dissolves upon introduction of sample into the test ampoule and 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®. Instrumental colorimetric: Vacu-vials®.

Storage Requirements: Kits should be stored in the dark and at room temperature. Precipitation of this reagent is accelerated by even short exposure to heat. Refrigeration will not reverse effects from heating, but will help to minimize further precipitation.

Shelf Life: Visual colorimetric: The CHEMets refill has a shelf life of 4 years. The color comparators have 2-year shelf lives. Instrumental colorimetric: The Vacu-vials kit has a shelf life of 4 years.

Accuracy: CHEMets: +/- ½ 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).

CHEMetrics, Inc., 4295 Catlett Road, Calverton, VA 20138, www.chemetrics.com
ph: 800-356-3072 or 540-788-9026, fax: 540-788-4856, email: technical@chemetrics.com