Technical Data Sheet

Zinc

Zincon Method

Applications and Industries: Potable water, purified wastewater effluent

References: APHA Standard Methods, 21st ed., Method 3500-Zn B (2005). ASTM D 1691-84, Zinc in Water, Test Method A.

Chemistry: In an alkaline solution, dissolved zinc reacts with zincon (2-carboxy-2'-hydroxy-5'-sulfoformazyl benzene) to produce a blue colored complex in direct proportion to the dissolved zinc concentration. Results are expressed in ppm (mg/L) Zn. To obtain test results for total zinc, the sample must be pre-treated prior to analysis.

Interference Information: Many metals other than zinc, including copper, nickel, cobalt, mercury, cadmium, chromium, aluminum, and iron react with zincon to cause positive interferences. The effect of many of these metallic ions can be eliminated by pretreatment with cyanide followed by cyclohexanone. In order to eliminate interferences due to manganese, sodium ascorbate can be added to the sample. CHEMetrics' zinc test kits do not contain the reagents necessary to perform these pretreatments; however, our Technical Services Department can provide a detailed procedure upon request. Chromate at concentrations greater than 50 mg/L may also interfere. Magnesium, calcium, and sodium do not interfere. Anions normally present in industrial waters and wastewaters, including phosphate, sulfate, and chloride, should not interfere.

The solubility of zinc is very pH dependent. At pHs of approximately 8 and above, zinc drops out of solution. Once the zinc has precipitated, it will not be measured with this kit unless the sample is pretreated for total zinc analysis. Also, the pH of the sample is significant with respect to proper color development. Sample pHs below approximately 3 may not develop color properly. If the sample pH is below 3, it should be adjusted to between 3 and 7. However, the pH must NOT be adjusted above 7; otherwise, the zinc will begin to drop out of solution.

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: Instrumental colorimetric: Vacu-vials®

Storage Requirements: Kits should be stored in the dark and at room temperature. Exposure to extreme temperatures or light will cause the indicator solution (A-9900) to expire prematurely. Use of expired solution causes low test results.

Shelf Life: The Vacu-vials test kits have 8-month shelf lives.

Accuracy: ± 10% error at 75% of full range, ± 20% error at 25% of full range, ± 30% error at CHEMetrics' Practical Detection Limit (PDL).

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