Technical Data Sheet

Sulfide

Methylene Blue Method

Applications and Industries: groundwater, wastewater, industrial process waters

References: APHA Standard Methods, 22nd ed., Method 4500-S^{2-} D - 2000. EPA Methods for Chemical Analysis of Water and Wastes, Method 376.2 (1983).

Chemistry: In an acidic solution, sulfide reacts with N,N-dimethyl-p-phenylenediamine and ferric chloride to produce methylene blue. The resulting blue color is directly proportional to the sulfide concentration. Results are expressed in ppm (mg/L) sulfide as S.

Interference Information:
The methylene blue chemistry measures acid soluble sulfides, which include unionized hydrogen sulfide (H_2S), HS^-, and acid-soluble metallic sulfides. The chemistry does not detect organic sulfides, other sulfides tightly bound within a chemical compound, or insoluble sulfides (e.g. copper and silver sulfides).
Strong reducing agents, including thiosulfate, sulfite and iodine, interfere with this chemistry by preventing or diminishing color development.
Iodide (often present in oil field wastewaters) at concentrations greater than 2 ppm may diminish color formation.
Ferrocyanide produces a blue color with the reagent.
Sulfide itself prevents the reaction if its concentration is high (approximately 10X the test range).
Chlorine, hydrogen peroxide, and other strong oxidizing agents may interfere by forming a pink color with the reagent.
Low test results will be obtained with samples having pHs above 10.5 or with samples buffered to a high pH. Adjustment of the sample pH to near neutral will eliminate this interference.

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® and VACUettes®, 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 and VACUettes refills, color comparators, and accessory solution have 2-year shelf lives. Instrumental colorimetric: The Vacu-vials kits have shelf lives of 2 years.

Accuracy: CHEMets and VACUettes kits: ± 1 color standard increment; Vacu-vials kits: ± 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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