Technical Data Sheet

Hydrogen Peroxide

Ferric Thiocyanate Method

Applications and Industries: Industrial effluents, wastewater, seawater, aseptic packaging; Food & beverage industry

References: D.F. Boltz and J.A. Howell, eds., Colorimetric Determination of Nonmetals, 2nd ed., Vol. 8, page 304 (1978).

Chemistry: In an acidic solution, hydrogen peroxide oxidizes ferrous iron. The resulting ferric ion reacts with ammonium thiocyanate to form ferric thiocyanate, a red-orange colored complex, in direct proportion to the hydrogen peroxide concentration. Results are expressed as ppm (mg/L) hydrogen peroxide (H_2O_2).

Sample Handling: Hydrogen peroxide is not stable in aqueous solution; the hydrogen peroxide content of aqueous samples, particularly when the concentration is low, will decrease rapidly. Agitation or exposure to sunlight or other strong light will accelerate the reduction of hydrogen peroxide in solution. Analysis should be performed immediately after sample collection, and excessive agitation and exposure to light should be avoided.

Interference Information:

Ferric iron and persulfate interfere positively if present at any level.

Chlorine up to 40 ppm and ozone up to at least 1 ppm do not develop color (i.e. do not cause a false positive result) with this chemistry. Both ozone and chlorine react with and consume hydrogen peroxide in solution, causing a decrease in the hydrogen peroxide concentration in the sample, but do not cause a negative interference with the test chemistry.

Cupric copper may interfere positively.

Peracetic acid (PAA) interferes positively. It is possible to minimize this interference by adding potassium iodide solution to the sample prior to analysis. Contact CHEMetrics' Technical Services staff at technical@chemetrics.com for details.

Oxidized manganese (permanganate, Mn^{7+}) interferes positively.

Sample pHs between 1 and 8 are tolerated. Samples with extreme pHs or that are highly buffered should be adjusted to pHs of approximately 4-7 prior to analysis.

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 have shelf lives of 4 years. The color comparators have 2-year shelf lives. Instrumental colorimetric: The Vacu-vials kit has a shelf life of 2.5 years.

Accuracy:

CHEMets and VACUettes kits: +/- 1 color standard increment
Vacu-vials kit: ≤ 0.1 ppm at 0 ppm, +/- 0.08 ppm at 0.50 ppm, +/- 0.30 ppm at 1.50 ppm, +/- 0.45 ppm at 4.50 ppm

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