CHEMetrics
By AquaPhoenix Scientific
SIMPLICITY IN WATER ANALYSIS
TECHNICAL DATA SHEET

Hydrogen Peroxide - Ferric Thiocyanate Method

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Applications and Industries

Industrial effluents, wastewater, seawater, aseptic packaging; Food & beverage industry

References

APHA Standard Methods Online, Method 4500-H_2O_2 B – 2020

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.

Available Analysis Systems

Visual colorimetric: CHEMets®, 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:
CHEMets and VACUettes refills, color comparators: at least 1 year

Instrumental colorimetric:
Vacu-vials kit: at least 1 year

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.

Interference Information

- Ferric iron and persulfate interfere positively if present at any level.
- Peracetic acid (PAA) interferes positively. To minimize this interference, potassium iodide solution can be added to the sample prior to analysis. Contact technical@chemetrics.com for procedure.
- Cupric copper at concentrations of 0.1 ppm and above causes an increasing negative interference as the kit reagents age. To minimize this interference, a controlled amount of hydrochloric acid solution can be added to the sample prior to analysis. Contact technical@chemetrics.com for procedure.
- Free 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 free chlorine react with and consume hydrogen peroxide in solution, causing a decrease in the hydrogen peroxide concentration in the sample.
- Monochloramine up to at least 10 ppm does not interfere.
- 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.
- Colored or turbid samples may make a visual color match difficult or cause a false positive result during instrumental analysis. CHEMetrics Sample Zeroing Accessory Pack can be used to correct for potential errors during instrumental analysis.

Accuracy Statement

Statements of accuracy are based on laboratory tests performed under ideal testing conditions using standards of known concentration prepared in deionized water.

CHEMets and VACUettes kits: ± 1 color standard increment

Vacu-vials kit:
≤0.10 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