Hydrogen Peroxide - DPD Method

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Applications and Industries

Drinking water, seawater, wastewater, aseptic packaging
Food & beverage industry

References

APHA Standard Methods, 23rd ed., Method 4500-Cl G – 2000
EPA Methods for Chemical Analysis of Water and Wastes, Method 330.5 (1983)
D.F. Boltz and J.A. Howell, eds., Colorimetric Determination of Nonmetals, 2nd ed., Vol. 8, p. 303 (1978)

Chemistry

Sample is treated with an excess of potassium iodide. In the presence of a molybdate catalyst, hydrogen peroxide oxidizes iodide to iodine. The iodine then oxidizes DPD (N,N-diethyl-p-phenylenediamine) to form a pink colored species in direct proportion to the hydrogen peroxide concentration. Results are expressed as ppm (mg/L) 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®

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 refill, color comparators, Activator Solutions:
at least 1 year

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 kit: ± 1 color standard increment

Interference Information

- The following additional oxidizers are measured quantitatively during analysis: chlorine, bromine, iodine, chlorine dioxide, ozone, peracetic acid, performic acid and permanganate.
- Hydrogen peroxide itself at concentrations significantly above the test range may cause an opaque brown color to develop in the test ampoule. Other oxidizers at high concentrations may prevent proper color development, causing a false low result.
- Persulfate up to approximately 1.5 ppm is not expected to interfere at 1 minute of color development. Beyond 1 minute or at higher concentrations, persulfate may interfere positively.
- Sample pHs between 2.5 and 10 are tolerated. Samples with pHs outside this range or that are highly buffered should be adjusted to pHs of approximately 6 - 7 prior to analysis.
- Ferric iron can be tolerated at concentrations up to 10 ppm.
- Cupric copper up to 10 ppm does not interfere.
- Manganese (II), Mn^{+2}, at up to at least 100 ppm does not interfere.
- Nitrite is a significant positive interference.
- Chromate may interfere.
- Sample color or turbidity may make a color match difficult during visual colorimetric testing.

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.