

Bromine - DPD Method

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Applications and Industries

Drinking water, surface and ground water, seawater, industrial process water, pools and spas

References

APHA Standard Methods, 23rd ed., Method 4500-Cl G - 2000
USEPA Methods for Chemical Analysis of Water and Wastes,
Method 330.5 (1983)

Chemistry

Sample is treated with an excess of potassium iodide. Bromine oxidizes the iodide to iodine, and the iodine then oxidizes DPD (N,N-diethyl-p-phenylenediamine) to form a pink colored species in direct proportion to the bromine concentration. Results are expressed as ppm (mg/L) Br₂.

This test measures total bromine and cannot be used to differentiate between free and combined bromine.

This test can be used for the determination of Total Residual Oxidizers (TRO) in seawater.

Sampling Information

Bromine is not stable in aqueous solution. Exposure of samples to light and sample agitation should be minimized. Bromine analysis should be performed immediately after sample collection.

Available Analysis Systems

Visual colorimetric: CHEMetrics®

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 Solution:
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: total chlorine, total iodine, chlorine dioxide, ozone, peracetic acid, performic acid and permanganate.
- Bromine itself and other oxidizers at concentrations significantly above the test range 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.
- Hydrogen peroxide at concentrations up to approximately 10 ppm does not interfere at 1 minute of color development.
- Ferric iron can be tolerated at concentrations up to 10 ppm.
- Cupric copper up to 10 ppm does not interfere.
- Manganese (II), Mn²⁺, at up to at least 100 ppm does not interfere.
- Nitrite at concentrations up to at least 5 ppm does not interfere.
- 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.