

Sulfite - Iodometric Method

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Applications and Industries

Process water, boiler water, white wine
Textile, Pulp & Paper, Food & Beverage industries

References

ASTM D 1339-84, Sulfite Ion in Water, Test Method C
APHA Standard Methods, 23rd ed., Method 4500-SO₃²⁻ B - 2000
USEPA Methods for Chemical Analysis of Water and Wastes, Method 377.1 (1983)

Chemistry

In an acidic solution, a starch indicator is used to indicate the endpoint of the iodide-iodate titration of sulfite. Results are expressed as ppm (mg/L) SO₃.

Available Analysis Systems

Titrimetric: Titrets®

Storage Requirements

Products should be stored in the dark and at room temperature.

Sample Handling

Sulfite is rapidly destroyed by atmospheric oxygen. Contact with air must be minimized and sample manipulation (e.g. shaking, filtering) should be avoided. Analysis should be performed immediately after collection. Sample temperatures should be below 50°C at the time of analysis.

Safety Information

Safety Data Sheets (SDS) are available upon request and at www.sdsfetch.com. Read SDS before using these products. Breaking the tip of an ampoule in air when a valve assembly is not attached may cause the glass ampoule to shatter. Wear safety glasses and protective gloves.

Accuracy Statement

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

Due to the non-linear nature of the test scale, the accuracy of these tests varies with the location of the test result on the ampoule scale. At twice the minimum concentration for a particular kit range, the accuracy is ± 10% error.

Interference Information

- Sulfur dioxide, thiosulfate, bisulfite, and metabisulfite are measured quantitatively with this chemistry. Correction factors are available to convert kit results to ppm for each of these analytes.
- Other reducing agents (e.g. sulfide, ferrous iron) will interfere positively.
- Sulfamic acid (A-9600 Neutralizer Solution) is added to the sample during analysis to prevent interference from nitrite.
- To minimize oxidation of sulfite to sulfate by metals such as copper, the reagent is formulated with EDTA.
- Sample pHs above 11 may cause erroneous results.
- Ascorbic acid (Vitamin C) will cause false high-test results. The sample can be pretreated with benzoquinone to prevent the ascorbic acid interference. Contact tech@aquaphoenixsci.com for details.

Thiosulfate

When the K-96XX Sulfite Titret® is used to analyze thiosulfate solutions, the readings can be converted from sulfite to thiosulfate by multiplying the readings by 2.8. This is based on the molecular weight conversion of Thiosulfate as S₂O₃²⁻ = 1.4*Sulfite as SO₃²⁻ (112.1/80.1), and the stoichiometry of the reactions, 1.0 Iodine reacts with 2.0 Thiosulfate or 1.0 Sulfite, for a final correction factor of 1.4*2.0=2.8.

Interpretation of Results

At the endpoint of this titration, the color of the solution in the test ampoule changes from blue to colorless. If the Titret® ampoule is filled with sample but the color of the solution remains blue (i.e. does not change to colorless), the sulfite concentration is below the test range. If the solution in the ampoule changes to colorless upon introduction of the first small dose of sample, the sulfite concentration is above the test range.