

DISCRETE ANALYZER CHEMISTRY

Sulphate (SO_4^{-2}) Method

Methods Referenced

- EPA Method 375.4 – Sulfate, Turbidimetric
- Standard Methods 4500- SO_4^{-2} E – Turbidimetric Method
- ASTM D516-11 – Standard Test Method for Sulfate Ion in Water
- ISO 15923-1 – Water quality – Determination of selected parameters by discrete analysis systems – Part 1: Ammonium, nitrate, nitrite, chloride, orthophosphate, sulfate and silicate with photometric detection

Reagent Composition

Only one reagent is used for the SO_4^{-2} method. Reagent is made in 5% HCl and final concentrations are as follows:

- 10 g/L Barium chloride
- 10 g/L Sodium chloride
- 0.25 g/L gelatin
- Or
- 48 mmol Ba^{+2}

Chemical Reactions



Sulfate ion is converted to a barium suspension under controlled conditions. The resulting turbidity is determined photometrically and compared to a curve prepared from standard sulfate solutions.

Note: Calculations using the limiting factor of Ba^{+2} (by moles) show that this reagent can react with a maximum of ~4600 mg/L free sulphate. However, method range is much lower due to instrument limitations.

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