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SOLID PHASE-SPECTROPHOTOMETRIC DETERMINATION OF THIOCYANATE USING PERMANGANATE AS OXIDANT AND POLYURETHANE FOAM AS A SORBENT

The possibility of indirect solid phase-spectrophotometrical determination of thiocyanate was studied by the use of permanganate as the oxidant: $5SCN^- + 6MnO_4^- + 13H^+ \rightarrow 6Mn^{2+} + 5SO_4^{2-} + 5HCN + 4H_2O$ and polyurethane foam (PUF), as a sorbent for iodine, which is formed after the reaction of an excess of oxidant with added iodide: $2MnO_4^- + 15I^- + 16H^+ \rightarrow 2Mn^{2+} + 5I^{3-} + 8H_2O$.

The effect of the acidity and the amount of permanganate in the oxidation of thiocyanate was studied. The optimum amount of iodide required for the formation of triiodide, was established. Effect of diverse ions was investigated.

For the study the oxidation of thiocyanate in the syringe with a capacity of 10.0 cm^3 were took 1.0 cm^3 of 0.5 M sulphuric acid, $1.6.10^{-4}$ M solution of permanganate, 1.0–8.0 cm^3 of the sample solution containing 0.1 μmol SCN^- and water to a total volume of 10.0 cm^3.

The mixture was stirred for 10 minutes at room temperature (~293 K) and added 1.0 cm^3 0.2 M of potassium iodide. Next, were measured the optical density of the solution triiodide (λ_{max}=350 nm) or iodine was removed from the solution triiodide on the PUF.

For this, the solution from the syringe through the membrane was transferred into a separatory funnel and this solution was passed through PUF at the rate of 2.5 cm^3/min.

Sorbent pressed between sheets of filter paper was placed in the cuvette of the spectrophotometer for solid samples (λ_{max}=370 nm). Light dispersion of the solid matrix was taken into account using the method heterochromatin extrapolation.

The interference of nitrite and Fe(III) on the determination of thiocyanate could be eliminated by decomposing with sulfamic acid and by masking with fluoride.

***Keywords: thiocyanate**, **permanganate**, **iodometry, solid phase-spectrophotometry, polyurethane foam**.*