

The Preservation and Determination of Sodium Sulfoyanate

BY JOSEPH GREENSPAN

Several recent improvements in the analytical determination of thiocyanates by oxidation with iodine in appropriate alkaline buffers permit of a more precise investigation of the kinetics of reactions involving thiocyanate ion.¹ In searching the literature for means of preventing mold formation in standard aqueous solutions of sodium thiocyanate, we were struck by the paucity of information regarding this salt.² We have found the following methods satisfactory.

Preservation.—The commercial c. p. salt was recrystallized from 95% alcohol. The addition of one drop of toluene per 100 cc. of approximately 0.02 *M* solutions completely prevented mold growth and loss of titer for a period of at least three weeks, whereas mold growth developed in the absence of toluene. Titration after two weeks of standing with toluene preservative gave a value of 0.01982 *M*; after three weeks, 0.01982 *M*.

Analytical.—The ammonia-ammonium salt buffer recommended by Pagel and Koch³ developed iodine absorption after standing for several days, giving titer values of 13.38, 17.68, 15.92 cc. against the calculated 20.83, 20.64, 20.54 cc., respectively, although accurately concordant results were obtained with fresh buffer, giving 18.71, 20.43 cc. *vs.* calculated 18.67, 20.46 cc. The authors mention that traces of nickel, cobalt and manganese produce erratic results. Our solutions were kept in Non-Sol bottles.

Schwicker's⁴ ammonium borate buffer method, as modified by Pagel and Ames,⁵ yielded a black precipitate, presumably an iodide of nitrogen, which disappeared upon subsequent acidification. This method was therefore rejected in favor of that employing a borax buffer,⁵ which yielded accurate and consistent values, 40.51, 40.53 cc. *vs.* calculated 40.49, 40.51 cc.

¹ See La Mer and Greenspan, *THIS JOURNAL*, **54**, 2739 (1932).

² Beilstein, 4th ed., Vol. III, p. 150; *Erstes Ergänzungswerk*, Vol. III, p. 66.

³ Pagel and Koch, *THIS JOURNAL*, **53**, 1774 (1931).

⁴ Schwicker, *Z. anal. Chem.*, **77**, 278-280 (1929).

⁵ Pagel and Ames, *THIS JOURNAL*, **52**, 2698 (1930).

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The Equilibrium of Para and Ortho Hydrogen

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Investigators in several laboratories are studying the transition of para to ortho hydrogen. In most of this work it is desirable to know the equilibrium ratio at different temperatures. There appears to be no accessible tabulation of this ratio, and it seems desirable to publish a table calculated