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Direct Determination of Eleostearic Acid in Tung Oil—Correction

In the article on "Direct Determination of Eleostearic Acid in Tung Oil" [IND. ENG. CHEM., Anal. Ed., **9**, 103 (1937)] in Table IV the deviations from means are not in accord with the corresponding percentages of eleostearic acid, which have been rounded off to one decimal place.

The retention of four significant figures in the percentages of eleostearic acid is warranted by the fact that all experimental data used in calculation contain at least four significant figures. The results of Table IV serve to show not only the precision ratio but also the concordance between the percentages of the acid determined in different runs. On this account these percentages and the deviations as listed in this table carry two decimal places, so as to show the degree of concordance and the magnitude of deviations better than the numbers with one decimal place would do. The average deviations from means thus contain one or two significant figures. The arithmetical mean when introduced in the calculation of the precision ratio may therefore be rounded off to two significant figures. It need not, however, be rounded off before calculation. Table IV should read as follows:

TABLE IV. PRECISION OF THE METHOD

	Shiao Mee Tung		Ta Mee Tung		Tsai Tung	
Experiment Number	Eleostearic acid, uncorrected %	Deviation from arithmetical mean %	Eleostearic acid, uncorrected %	Deviation from arithmetical mean %	Eleostearic acid, uncorrected %	Deviation from arithmetical mean %
1	76.99	0.02	76.48	0.10	75.85	0.10
2	77.04	0.07	76.44	0.06	75.76	0.01
3	77.02	0.05	76.51	0.13	75.82	0.07
4	76.91	0.06	76.31	0.07	75.63	0.12
5	77.10	0.13	76.24	0.14	75.86	0.11
6	76.87	0.10	76.48	0.10	75.81	0.06
7	76.97	0.00	76.26	0.12	75.67	0.08
8	76.85	0.12	76.29	0.09	75.62	0.13
		Av. 0.07		Av. 0.10		Av. 0.09
Arithmetical mean	76.97		76.38		75.75	
Average deviation/arithmetical mean	0.9 part per 1000		1.3 parts per 1000		1.2 parts per 1000	

P. S. KU

The Stability of Solid Sodium Thiosulfate

VICTOR K. LA MER, Columbia University, New York, N. Y., and
HAZEL M. TOMLINSON, Temple University, Philadelphia, Pa.

IN 1932, La Mer and Kamner (*3*) found that a particular sample of sodium thiosulfate yielded steadily drifting velocity constants when employed as a reactant in the bromoacetate thiosulfate reaction, whereas with other samples nondrifting constants were obtained. The difficulty disappeared on recrystallization of the thiosulfate. The puzzling feature, however, was that this particular sample of thiosulfate had been recrystallized with considerable care previously (1929–31) by La Mer and Fessenden (*2*), who obtained excellent kinetic results with the sample at that time. La Mer and Kamner, accordingly, suggested that sodium thiosulfate in the solid phase probably undergoes a slow decomposition into sulfur and sodium sulfite. Such instability would not ordinarily be detected in analytical work, but would, of course, seriously interfere with the kinetics of a reaction presumed to involve only bromoacetate and thiosulfate.

In resuming the kinetic studies of this reaction (1937), the authors have had occasion to use a thiosulfate sample twice recrystallized from water below 60° C. by Percival (*4*) in 1933. This sample proved entirely satisfactory in his work on the *N*-chloroacetanilide rearrangement. Four years later, this solid sample forms cloudy aqueous solutions which give positive tests for sulfite (*1*). When a portion was once recrystallized, the clear aqueous solution was sulfite-free. Moreover, when a solution of Percival's thiosulfate was used (1937) in kinetic studies of the bromoacetate-thiosulfate reaction, reproducible velocity constants were obtained but they exhibited almost identical drifts with time, the puzzling behavior encountered by Kamner in 1932.

Approximately 0.01 *M* solutions were prepared from the previously and newly purified crystals using identical treatment of containers, carbon dioxide–free water, and protection from light. Aliquot portions of both solutions were titrated frequently against the same iodine solution, using the same indicator solution, after the same time intervals over a period of 2.5 summer months. From thirteen such titrations, the average titer remained constant over this period to within one part per thousand both for old and recrystallized salt.

Although the investigation is incomplete, these findings are submitted for their analytical interest, since it appears that the constancy of the titer of a thiosulfate solution is not a sufficiently adequate criterion of its stability for application to kinetic and other sensitive types of experimentation.

Summary

Sodium thiosulfate decomposes slowly in the solid state to sulfur and to some substance giving the analytical tests for sodium sulfite. The deterioration of solutions of freshly recrystallized thiosulfate is not more rapid than that of solutions prepared from crystals not recrystallized recently.

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