U. S. Department of Commerce
Alexander B. Trowbridge,
Secretary

National Bureau of Standards
A. V. Astin, Director

Certificate of Analysis

Standard Reference Material 17a

Sucrose

Moisture	less than 0.01%
Ash	less than 0.001%
Reducing substances, estimated as invert sugar [1]	less than 0.02%

Each 100 ml of a normal sucrose solution contains 26.000 g of dried substance, weighed with brass weights in air (760 mm pressure, 20 °C, 50 percent relative humidity). At 20 °C, this solution in a 200-mm polariscope tube reads 100 °S (International Sugar Degrees). The illumination is white light filtered through a 15-mm layer of a 6-percent solution of potassium dichromate. The International Sugar Scale was defined and adopted by the International Commission for Uniform Methods of Sugar Analysis at the Eighth Session, Amsterdam, 1932 [2], [3].

The rotation in circular degrees of the normal sucrose solution observed in a 200-mm polariscope tube, for wavelength 5461 Å is 40.763° and for wavelength 5892.5 Å is 34.617°.

The specific rotations of sucrose for the normal solution are:

$$[\alpha]^{20\,^\circ C}_{5461\ Å} = 78.342^\circ \qquad 26 \text{ g per } 100 \text{ ml}$$

$$[\alpha]^{20\,^\circ C}_{5892.5\ Å} = 66.529^\circ \qquad 26 \text{ g per } 100 \text{ ml}$$

[1] F. J. Bates and R. F. Jackson, Bull. B. S. 13, 67 (1916).

[2] Proceedings of the Eighth Session, International Commission for Uniform Methods of Sugar Analysis, Intern. Sugar J. 35, 17 (1933).

[3] F. J. Bates and Associates, NBS Circular C440, pp 79, 775 (1942).

The sucrose was supplied by the California and Hawaiian Sugar Refining Corporation of Crockett, California. Chemical and physical testing to determine its suitability as a standard reference material were performed by B. S. Carpenter, B. Coxon, R. A. Paulson, R. Schaffer, and B. F. West of the Analytical Chemistry Division.

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W. Wayne Meinke, Chief
Office of Standard Reference Materials