U. S. Department of Commerce
Malcolm Baldrige
Secretary

National Bureau of Standards
Ernest Ambler, Director

National Bureau of Standards

Certificate

Standard Reference Material 1590

Stabilized Wine

This Standard Reference Material (SRM) is intended primarily for use in evaluating the accuracy of ethanol determinations in wine and in calibrating the instruments used in these determinations. The SRM may also be useful for the determination of ethanol in other beverages or preparations.

The ethanol content of SRM 1590 was determined by two independent analytical methods. The average of all determinations by gas chromatography was 18.58 percent by volume at 20 °C; and, by titration of the ethanol after its distillation from the wine was 18.56 percent by volume at 20.0 °C.

Based on the concordant analytical results obtained, the certified concentration of ethanol is:

18.57 ± 0.16 PERCENT BY VOLUME

AT 20.0 °C

The uncertainty is given as the statistical tolerance limits that will include the ethanol concentration for at least 99% of the vials of SRM 1590 at a confidence interval of 95%.

Based on the experimentally determined concentration at 20.0 °C and the difference between the percent ethanol by volume at 20.0 °C and the percent ethanol by volume at 15.6 °C (1,2), the certified concentration of ethanol was calculated to be:

18.51 ± 0.16 PERCENT BY VOLUME

AT 15.6 °C (60.0 °F).

The uncertainty is as stated above.

Precautions

(a) Store ampoules at room temperature in the dark until ready to use.

(b) Use contents of ampoules immediately after opening.

Analyses were performed in the Center for Analytical Chemistry by S. N. Chesler, E. R. Deardorff and D. Enagonio.

The statistical analysis of the ethanol data was performed by K. R. Eberhardt of the Statistical Engineering Division.

The technical aspects leading to the preparation, certification, and issuance of this SRM were coordinated through the Office of Standard Reference Materials by R. Alvarez.

Gaithersburg, MD 20899
November 21, 1985
(Revision of Certificates
dated 12-11-80 and 11-9-81)

Stanley D. Rasberry, Chief
Office of Standard Reference Materials

(over)

Source of Material

The wine for this SRM was stabilized at and obtained from the University of California's Department of Viticulture and Enology, Davis, California. A white wine of normal acidity was refrigerated and filtered through a bentonite material. A portion of the wine was passed through a cation exchange resin in the sodium form and blended with the original wine. The wine was then fortified to 18% ethanol. After adding invert sugar, and adjusting the copper and iron concentrations to measurable levels, the wine was filtered. It was ampouled by Microbiological Associates, Walkersville, Md.

Material Homogeneity A stratified random sampling scheme was used to select ampoules for analysis from various points in the ampouling sequence. The ethanol content was then determined by gas chromatography. The primary concern was to determine whether the concentration had changed during ampouling. No significant change was found.

ADDITIONAL INFORMATION

Additional information on the composition of SRM 1590 was provided by a collaborative study organized by the American Society of Enologists.

The volatile acidity, copper, iron, potassium, and sodium were determined by the cooperators using the methods described in "Official Methods of Analysis of the Association of Official Analytical Chemists", Thirteenth Edition, 1980, the Association of Official Analytical Chemists, 1111 N. Nineteenth St., Arlington, Va. 22209. The recommended values, which are not certified, and the AOAC methods used in their determinations are shown below.

1. Volatile acidity	(0.24 g/L)	AOAC 11.042
2. Copper	(0.30 mg/L)	AOAC 11.021
3. Iron	(6.0 mg/L)	AOAC 11.022
4. Potassium	(320 mg/L)	AOAC 11.024
5. Sodium	(95 mg/L)	AOAC 11.026

Cooperative analyses were performed in the following laboratories:

Almaden Vineyards, San Jose, Calif., R.H. Dowrie.
Franzia Brothers Winery, Ripon, Calif., J.A. Walls.
E. & J. Gallo Winery, Modesto, Calif., A. Caputi, Jr.
Mogan David Wine Corporation, Chicago, Ill., E. Gogel.
Mont La Salle Vineyards, Napa, Calif., G.J. Pilone.
Mont La Salle Vineyards, Reedley, Calif., R.G. Hanson.
National Bureau of Standards, Inorganic Analytical Research Division, Washington, D.C., T.C. Rains and T. Rush.
Paul Masson Vineyards, Saratoga, Calif., D. Quinsland.
Robert Mondavi Winery, Oakville, Calif., J.M. Vahl.
San Francisco Regional Laboratory, Bureau of Alcohol Tobacco and Firearms, Treasure Island, Calif., J.A. Cherolis.
The Taylor Wine Company, Hammondsport, N.Y., A.C. Rice.
U.S. Customs Laboratory, San Francisco, Calif., S.A. Fike.

REFERENCES

1. "A Standardization of Methods for Determination of the Alcohol Content of Beverages and Distilled Potable Spirits," Pure and Applied Chemistry 17, 274 (1968).
2. Standard Density and Volumetric Tables, 6th ed., U.S. Department of Commerce, Circular of the Bureau of Standards, No. 19, p.8 Government Printing Office, Washington, DC (1924).