BUCK Scientific

Application Note #AA3002

Determination of Trace Lead, Poly-Phenols and Tannins in Wines Using a Single Analytical Instrument

The manufacturing of wine and other fermented beverages has typically been a fairly simple process. Historically, the expertise of the sage wine-master was used to gauge the quality of the product. Today, many environmental concerns, health factors, and government rules, prompt the producers of fine wines to monitor several important components in the grape, the fermentation vats, and in the final wine. Typically, several different analytical instruments have been used to perform these tests including Flame Atomic Absorption Spectrophotometers (**FAAS**), UV Spectrophotometers (**UV**), and Colorimeters (**VIS**).

The 210VGP Atomic Absorption system from Buck Scientific, Inc. employs a high performance monochromator and a unique cell-holding attachment that allows it to be used as three analytical tools in one: FAAS, UV and VIS.

This means that three of the more critical tests can be performed with a single device. The FAAS system normally uses a Lead Hollow Cathode Lamp (HCL) to measure the **Lead** signal at 283nm, while the UV test for **Poly-Phenols** at 280nm is best done with a D_2 (Deuterium) HCL. The VIS determination of **Tannins** at 520nm uses a Cr (Chromium) HCL and the Buck #5711 cell holder. Tannins can also be measured at 760nm using a Cs (Cesium) HCL. Other test procedures for measurements at 420nm and 620nm can be done with a Rb (Rubidium) HCL. Examples of actual samples are listed on the back.

SIC: 2084

Basic Conditions: (for best linearity and precision)

Lead Calibration: 5 ppm Standard and an Acetic Acid Blank
Phenol Calibration: 2.0, 5.0, and 10 ppm in 5% Acetic Acid; 10 cm Quartz
Tannin Calibration: 25, 100, and 500 ppm in Water: Ethanol; 5 cm Glass

Sample ID	Pb (ppm)	Phenols (ppm)	Tannins (ppm)
Napa Varietal Must	8.7	768	2,570
Napa Varietal First Ferment	6.3	227	982
Medocino County Sauvignon Blanc	0.93	169	64
LaCour Pavillion Bordeaux	1.4	403	1,328

The ultimate flexibility of the Buck 210VGP design permits this unique testing capability to be done very economically and efficiently with just **one** system, saving space, money, and time.

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