

# DATA BULLETIN

## *Determination of the $\delta^{13}\text{C}$ isotope ratio of ethanol in wine with BiovisION*

**BiovisION** is a complete solution for stable isotope analysis in the food and fragrance industries and is a critical tool in the arsenal for protecting the consumer from unscrupulous behavior. With low running costs and minimal contact time, **BiovisION** provides significant competitive advantage to your laboratory.

Wine is a high value commodity which commands a premium price dependent on its origin and quality. In some countries lower quality wines may be illegally improved by the addition of sugars during fermentation in a process known as "chaptalization". Analysis of the  $\delta^{13}\text{C}$  signature of the ethanol can help detect this fraudulent activity.

This data bulletin demonstrates the analysis of distilled ethanol complying with European Commission Regulation No 440/2003 using the **BiovisION** stable isotope analyzer. Three wine/must-ethanol samples and one alcohol from cereals with known  $\delta^{13}\text{C}$  values were analyzed. The average  $\delta^{13}\text{C}$  values and corresponding absolute standard deviations are given below.

SAMPLE	n	MEASURED $\delta^{13}\text{C}$ [‰]	THEORETICAL $\delta^{13}\text{C}$ [‰]
Alcohol from cereals	4	$-22.78 \pm 0.01$	-22.8
Must Italy	4	$-26.46 \pm 0.01$	-26.5
Must Italy	4	$-26.92 \pm 0.01$	-26.9
Wine Italy	4	$-24.64 \pm 0.01$	-24.6

The results show that the  $\delta^{13}\text{C}$  value can be measured with a very high accuracy and precision. **BiovisION**, equipped with the vario liquid sampler is very well suited for the detection of intermixture of C<sub>4</sub> sugars in Wine.

**BiovisION** fulfills the requirements of the European Commission Regulation No 440/2003 (annex II) on "determination by isotope mass spectrometry of the  $^{13}\text{C}/^{12}\text{C}$  ratio in wine ethanol or ethanol".

### CONFIGURATION:

**BiovisION** with optional vario Liquid Sampler in CN mode

### SAMPLE:

2  $\mu\text{l}$  alcohol, liquid



*The analyses were performed in cooperation with Dr. Federica Camin, IASMA Reserach Center, San Michele All'Adige, Italy.*

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