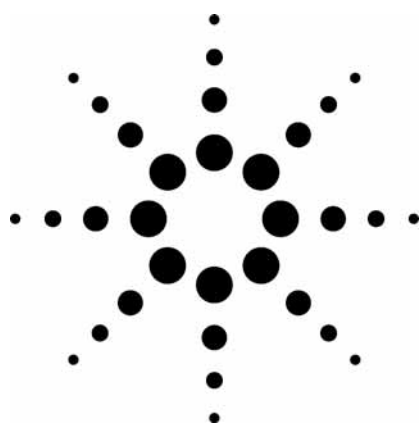


Agilent Model 355 Sulfur Chemiluminescence Detector (SCD): Wine Samples



• Technical Overview

Introduction

Sulfur compounds present in wine can be naturally occurring or added by wine makers. Naturally occurring compounds can either enhance or detract from the flavor, while sulfur dioxide is commonly added to inhibit spoilage and oxidation. The use of headspace gas chromatography with sulfur chemiluminescence detection is ideal for the determination of these compounds.

Sulfur dioxide (SO₂) is one of the most prevalent additives used by wine producers today. Although SO₂ is produced naturally during the fermentation process, winemakers often increase its concentration. This retards the formation of bacteria and spoilage yeasts and prevents oxidation reactions, all of which can affect color and clarity and induce off-flavors. Conversely, the presence of too much SO₂ can also cause an undesirable odor and can have health effects on asthmatics and possibly on certain steroid-deficient individuals. There are also many naturally occurring sulfur compounds in wine. The presence of some of these compounds

enhances the flavor and aroma of wine while others can cause off-flavors. For instance, wines that exhibit sulfurous off-flavors contain higher levels of methyl and ethyl mercaptans, dimethyl sulfide, and thioacetic acid esters than wines lacking these undesirable flavors. The Agilent Sulfur Chemiluminescence Detector (SCD) provides a highly specific means of measuring sulfur compounds with no interference from nonsulfur-containing species present in wines. The chromatograms below show SO₂ and dimethyl sulfide detected in headspace samples taken from various wine samples. While the data show low ppm levels, these values reflect concentrations in the headspace, not in the native samples. Also note that compared to the Model 350, a 10-fold sensitivity increase is achieved with the Agilent Model 355 SCD. In fact, with a sensitivity specification of less than 0.5 picograms sulfur per second, the 355 SCD is the most sensitive sulfur detector available. The Agilent Model 355 SCD is an outstanding detector offering selectivity, sensitivity, linearity, and equimolar response for sulfur compounds.



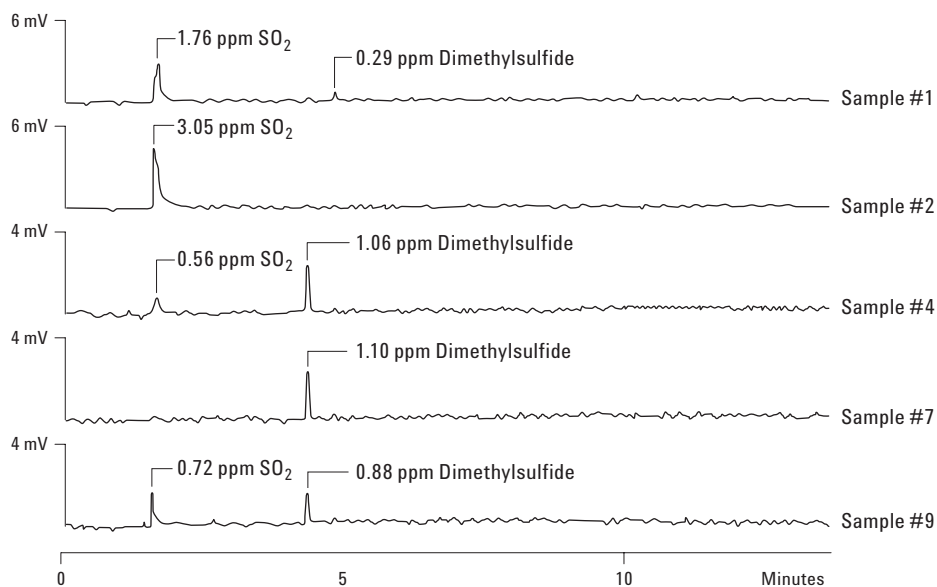


Table 1. Chromatographic Conditions

Initial temperature	35 °C for 1 min
Temperature ramp	10 °C/min
Final temperature	220 °C
Injection volume	1.0 mL headspace
Column type	SPB1 FSOTC (Supelco)
Column dimensions	30 M × 0.32 mm
Film thickness	4.0 μm
Split ratio	10:1

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