

ABSORBANCE ONE TEST KIT FOR THE DETERMINATION OF FREE SULFUR DIOXIDE

PRODUCT

Product no. 4A190, for 30 tests.

CONTENTS

The kit includes the following reagents:

Reagent No.	Reagent	Preparation	Quantity	Stability
1	Buffer	Ready to use	33 mL	All reagents (as provided) are stable until the kit's expiry date
2	Chromogen	Ready to use	17 mL	
3	Standard	Refer to standard preparation procedure	2 x 74 mg	

Standard concentration is 50 mg/L when prepared as instructed.

SAFETY

- Please read the Safety Data Sheets (SDS) before use
- Take the necessary precautions for the use of laboratory reagents

PROCEDURE

Operating Parameters

Wavelength

340 nm

Cuvettes

Semi-micro with 1cm path length 1cm *micro-cuvette*, quartz, silica, methacrylate or polystyrene

Re-ordering code 2C890 (Australia only)

Temperature

20 – 25°C

Final volume in cuvette

1.8 mL

Zero

against air with no cuvette in light path

STANDARD PREPARATION

Quantitatively transfer the contents of one bottle (74 mg) of the supplied sodium metabisulfite powder ($\geq 99\%$ purity) to a 100 mL volumetric flask. Add a little distilled water to the bottle and transfer this to the volumetric flask to ensure all of the powder has been transferred. Make to volume with distilled water. Immediately cap and mix until completely dissolved. Store this concentrated solution in the refrigerator for up to one week. To prepare the 50 mg/L working standard, dilute 1 mL of the concentrated sulphite solution with 9 mL of distilled water, i.e. prepare a 1 in 10 dilution. Discard after use. Fresh working standard can be prepared from the concentrated stock solution as needed.

Please note that the Standard in this assay is used as a calibration factor (for calculation purposes only) and will not give a mg/L result. Expected A1 Standard absorbance is approximately 0.1, expected A2 Standard absorbance is approximately 1.2 – 1.4.

SAMPLE PREPARATION

DO NOT decolourise with either PVPP or activated charcoal, as both fining agents have been demonstrated to remove sulfite from the sample. Turbid samples may be filtered or centrifuged.

All red wine samples must be diluted 1 in 5 with distilled water.

DO NOT dilute white wines, ciders or spirits unless the final A₂ absorbance reading is greater than 1.5 absorbance units, or the sample contains more than 50 mg/L of free SO₂. If dilution is needed, the best results are achieved with the least dilution possible, for example dilute 1 in 2 with distilled water.

It is recommended to run a sample with known free SO₂ concentration (such as a cask wine previously tested) as a control with each assay.

SAMPLE ANALYSIS

a. Pipette the following volumes of reagents into the cuvettes:

Reagent	Blank assay	Standard assay	Sample assays
1. Buffer	1000 µL	1000 µL	1000 µL
Sample or Standard		300 µL	300 µL
Distilled water	300 µL		

b. Mix well by gentle inversion and read absorbances, A₁, after 3 minutes.

c. Pipette the following reagent into the cuvettes:

2. Chromogen	500µL	500µL	500µL
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d. Mix well by gentle inversion and read absorbances, A₂, at **precisely 10 minutes**.

CALCULATIONS

These may be performed on the Absorbance one software directly, or using the calculation spreadsheets below*

1. Calculate the net absorbance for the blank assay:

$$\text{Blank absorbance, } A_{RB} = A_2 - (A_1 \times 1300/1800)$$

2. Calculate the corrected absorbance for the standard assay:

$$\text{Standard absorbance, } A_{STD} = A_2 - (A_1 \times 1300/1800)$$

$$\text{Corrected absorbance, } C_{\text{standard}} = A_{STD} - A_{RB}$$

3. Calculated the corrected absorbance for the samples:

$$\text{Sample absorbance, } A_{\text{SAMPLE}} = A_2 - (A_1 \times 1300/1800)$$

$$\text{Corrected absorbance, } C_{\text{sample}} = A_{\text{SAMPLE}} - A_{RB}$$

4. Since the concentration of the standard is 50 mg/L, calculate the free sulfur dioxide content of the samples as follows:

$$\text{Free SO}_2 \text{ (mg/L)} = \frac{C_{\text{sample}}}{C_{\text{standard}}} \times 50 \text{ mg/L} \times \text{dilution factor}$$

*A calculation spreadsheet is available for download at the following locations in the absence of Absorbance one software.

Australia based users

<https://winechek.com/calculation-worksheets/>

Users outside of Australia

<http://www.vintessential.com.au/resources/calculation-worksheets/>