TOTAL SO_2

5 x 20 ml

INTENDED USE

Reagent for colorimetric determination of total sulphurous anhydride in foodstuff and other sample material.

PRINCIPLE OF THE METHOD

Total sulphurous anhydride selectively reacts with a disulfide chromogenic compound, with the formation of a yellow product with a absorption peak at 416 nm (406-426 nm). Absorbance increase at that wavelength is proportional to the amount of total sulphurous anhydride present in the sample.

KIT COMPONENTS

The components of the kit are stable until expiration date on the label.
Keep away from direct light sources.

SO2T R1: **4 x 20 ml (liquid) blue cap**
Composition: buffer, preservatives and stabilizers.

SO2T R2: **1 x 20 ml (liquid) red cap**
Composition: ethanol > 40%, DTNB, preservatives and stabilizers.

SO2T BL: **2 x 50 ml (liquid) white cap**
Composition: buffer, preservatives and stabilizers.

Store all components at 2-8°C.

In vitro use only.

MATERIALS REQUIRED BUT NOT SUPPLIED

Current laboratory instrumentation. Spectrophotometer UV/VIS with thermostatic cuvette holder. Automatic micropipettes. Glass or high quality polystyrene cuvettes.
Standard total SO_2 160 mg/l can be prepared in laboratory according to the following indication.
Materials required:
- deionized water,
- sodium metabisulfite (CAS 7681-57-4), pur. ≥ 99%,
- volumetric glassware class A

Procedure:
Place 2.40 g of sodium metabisulfite in to a 100 ml volumetric flask, then add 40 ml of deionized water, and slowly swirl until complete dissolution. Fill up to the mark with deionized water.
Pour 1 ml of this solution into another volumetric flask, and bring to the volume of 100 ml with deionized water, then mix well. The standard is ready to use.
Store at 2-8°C.
Stability: prepare daily.

REAGENT PREPARATION

Procedure 1:
Use separate reagents.
Stability: until expiration date on the label at 2-8°C.

Procedure 2:
Working reagent: mix 4 parts of reagent R1 with 1 part of reagent R2.
It is suggested to prepare strictly the amount needed for the analysis, and any residue has to be stored at 2-8°C away from direct light sources.
Analytical performances of mixed reagent begin to fall off 48 hours after its preparation.

PRECAUTIONS

SO2T R1: It is not classified as hazardous.

SO2T R2: **Warning.** May cause damage to the kidney, through prolonged or repeated oral exposure (H373). Get medical advice if you feel unwell (P314). Avoid breathing vapours (P261).

SO2T BL: It is not classified as hazardous.

SPECIMEN

Wine or any foodstuff once its utilization has been tested.

PROCEDURE 1

Wavelength: 420 nm - accepted 406 ÷ 426 nm
Lightpath: 1 cm
Temperature: 37°C

dispense:	blank	standard	sample
reagent R1	2 ml	2 ml	2 ml
water	60 µl	-	-
standard	-	60 µl	-
sample	-	-	60 µl

Mix, incubate at 37°C for 3 minutes.
Read absorbances of standard (As_1) and sample (Ac_1) against reagent blank.

dispense:	blank	standard	sample
reagent R2	500 µl	500 µl	500 µl

Mix, incubate at 37°C for 5 minutes.
Read absorbances of standard (As_2) and sample (Ac_2) against reagent blank.

RESULTS CALCULATION

$$\text{Total } SO_2 \text{ mg/l} = \frac{Ac_2 - (0.8 \times Ac_1)}{As_2 - (0.8 \times As_1)} \times \text{standard value}$$

PROCEDURE 2 (cell flow instruments)

Wavelength: 420 nm - accepted 406 ÷ 426 nm
Lightpath: 1 cm
Temperature: 37°C

dispense:	reagent blank	standard	sample blank	sample
water	50 µl	-	-	-
standard	-	50 µl	-	-
sample	-	-	50 µl	50 µl
reagent	2 ml	2 ml	-	2 ml
blank	-	-	2 ml	-

Mix, incubate at 37°C for 5 minutes.
Read absorbances of standard (As_1), sample (Ac_1), reagent blank (Ar_1) and sample blank (Ac_2).

RESULTS CALCULATION

$$\text{Total } SO_2 \text{ mg/l} = \frac{(Ac_1 - Ar_1) - Ac_2}{As_1 - Ar_1} \times \text{standard value}$$

TEST PERFORMANCE

Specificity
The method is specific for total sulphurous anhydride.

Linearity
The method is linear up to 300 mg/l.
If the limit value is exceeded, it is suggested to dilute the sample 1+4 with distilled water and to repeat the test, multiplying the result by 5.

Precision
White wine
intra-assay (n=10)

	mean (mg/l)	SD (mg/l)	CV%
sample	35.413	0.342	0.97

inter-assay (n=20)

	mean (mg/l)	SD (mg/l)	CV%
sample	35.030	1.194	3.41

Rose wine
intra-assay (n=10)

	mean (mg/l)	SD (mg/l)	CV%
sample	12.848	0.129	1.00

inter-assay (n=20)

	mean (mg/l)	SD (mg/l)	CV%
sample	12.801	0.411	3.21

WASTE DISPOSAL

This product is made to be used in professional laboratories.
P501: Dispose of contents according to national/international regulations.

REFERENCES

R.E. Humphrey, M.H. Ward and W. Hinze, Anal. Chem., 42, 698-702 (1970).
C. Sadegh and R.P. Schreck, MIT Undergraduate Research Journal, 8, 39-43 (2003).

MANUFACTURER

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SYMBOLS

LOT lot of manufacturing
REF code number
storage at temperature interval
expiration date (year/month)
warning, read enclosed documents
read the directions