EN

SO_2 Free

REF 984634

❶	3 x 20 ml Reagent 1
❷	3 x 20 ml Reagent 2

INTENDED USE
Reagent for photometric determination of free Sulfur Dioxide in homogenous liquid samples using automated Thermo Scientific Arena or Gallery analyzer.

METHOD
The method is based on the reaction between sulfur dioxide, pararosaniline and formaldehyde. Method is performed at 37 °C, using 575 nm filter and for side wavelength 700 or 750 nm filter.

REAGENT INFORMATION

Ready-to-use reagent		Barcode id
Reagent 1	3 x 20 ml	A40
Reagent 2	3 x 20 ml	A41

Note: Labels of reagent vials have two barcodes.
For Arena analyzers, turn the short barcode to the barcode reader.
For Gallery analyzers, turn the long barcode to the barcode reader.

Concentrations
Pararosaniline ≤ 0.1 %
Formaldehyde ≤ 0.2 %

Precautions
SO2 Free R2 is hazardous.
See separate sheet inside the kit for Hazardous- and Precautions-phrases: H314, P280, P303 + P361 + P353, P305 + P351 + P338.
EUH208: Contains formaldehyde. May produce an allergic reaction.

Exercise the normal precautions required for handling all laboratory reagents.
The product has to be disposed of as laboratory chemical in accordance with local regulations.

Preparation
The reagents are ready-to-use.
Note: Check that there are no bubbles on the surface of the reagent when you insert vials into the analyzer.

Storage and Stability
Reagents in unopened vials are stable at 2…8 °C until the expiry date printed on the label. Do not freeze the reagents.
Refer to the Application Notes of your analyzer for the on board stability of reagents.

SAMPLES

Sample Type
Food and other sample material e.g wine.

Sample concentration and Arena/Gallery application
All method related details are in the separate application note.

Sample preparation
If the sample has substances interfering the measurement, please handle it according to the following suitable preparation procedure:

Note: Polyvinylpyrrolidone (PVP) cannot be used with this reagent because of the inhibition of color forming.

- Use clear, colorless and practically neutral liquid samples directly.
- Filter or centrifuge turbid solutions.

TEST PROCEDURE
See the separate Arena or Gallery System Application note for an automated procedure. Due to the differencies in sample matrixes, all performance should be evaluated by the user.

Materials required but not provided
Distilled water (aseptic and free of heavy metals) and general laboratory equipment.

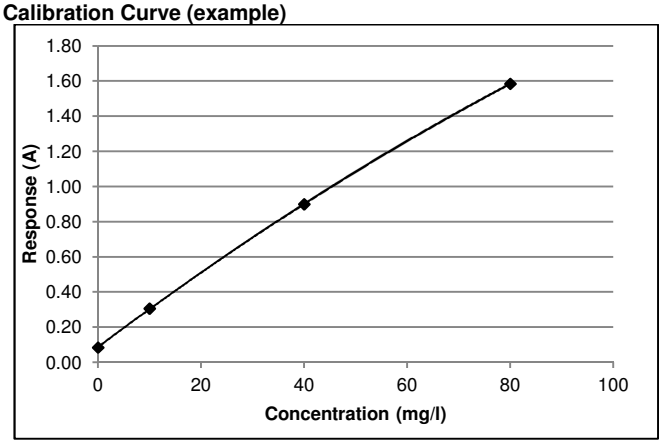
Calibration
A fresh solution is used for the calibration. Weigh precisely 0.0303 g of sodium metabisulfite ($Na_2S_2O_5$ e.g. S9000/ Sigma-Aldrich,MW = 190.11 g/mol, purity ≥ 98 %) into a 250 ml volumetric flask and fill up to mark with distilled water. The solution has a sulfur dioxide concentration of 80 mg/l. The standard must be used fresh.

Quality Control
Use quality control samples at least once a day and after each calibration and every time a new bottle of reagent is used. It is recommended to use two level of controls. The control intervals and limits must be adapted to the individual laboratory requirements. The results of the quality control sample(s) should fall within the limits pre-set by the laboratory.

CALCULATION OF RESULTS
The results are calculated automatically by the analyzer using a calibration curve.

Conversion factors:
mmol/l x 64.054 = mg/l
mg/l x 0.0156 = mmol/l

Calibration Curve (example)



Calibrator	Response (A)	Conc. (mg/l)
Water	0.084	0
SO2F 10	0.305	10
SO2F 40	0.899	40
SO2F 80	1.584	80

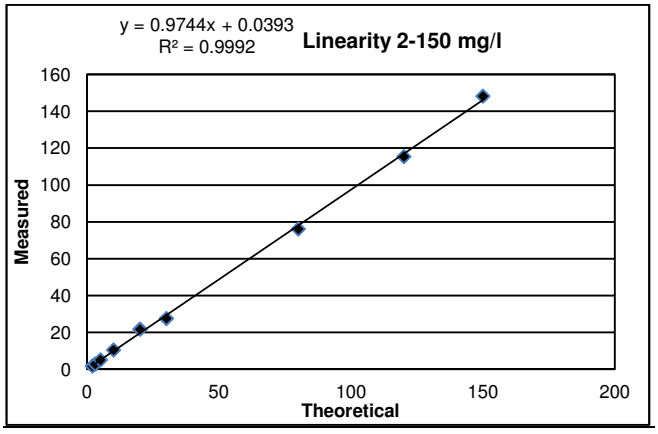
Note that the calibration curve is lot dependent. This calibration curve is performed by Gallery analyzer.

LIMITATIONS OF THE PROCEDURE

Interference
The determination is specific for free sulfur dioxide. No interference was observed.

MEASURING RANGE
The test has been developed to determine free sulfur dioxide concentrations within a measuring range from 2 to 150 mg/l.

PERFORMANCE CHARACTERISTICS
The results obtained in individual laboratories may differ from the performance data given. Linearity testing has been performed with water based solutions. Different matrixes may change the linearity limits of the test.



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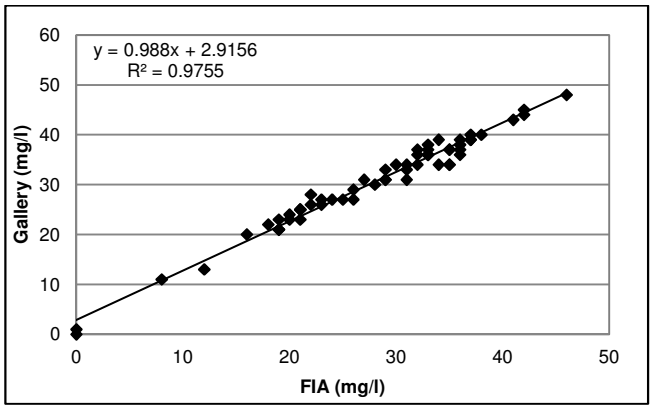
Determination limit (=Test limit low)
The determination limit is the lowest concentration that can be measured quantitatively. The determination limit for this method is 2 mg/l.

Precision
Gallery analyzer

	White wine		Rosé wine		Red wine	
	N	39	**N**	40	**N**	40
	Mean	31	**Mean**	5	**Mean**	24
	SD	**SD**	**SD**	**CV %**	**SD**	**CV %**
Within run	0.480	1.5 %	0.168	3.4 %	0.442	1.8 %
Between run	0.752	2.4 %	0.156	3.2 %	0.502	2.1 %
Total	0.892	2.9 %	0.230	4.6 %	0.669	2.8 %

A precision study was performed using the Gallery analyzer, with the number of measurements being n = 40.

Method Comparison
Graph below shows the correlation of wine samples measured with Gallery system SO2 Free method and similar type of FIA pararosaniline method.



OTHER REMARKS
Note that part of the application performance has been verified with pure chemicals dissolved in deionized water. The results obtained in individual laboratories may differ from the given performance data due to e.g. sample matrix, concentrations or analysis environment. Each laboratory is responsible to verify the method to prove the analysis performance.

WASTE MANAGEMENT
Please refer to local legal requirements. It is recommended to empty the analyzer cuvette waste bin and waste water daily. Emptying should be done immediately after the analysis when using hazardous reagents/solutions.
Note: If using reagents/solutions that react with each other, cuvette waste bin and waste water should be emptied and washed between use of these reagents.

ADDITIONAL MATERIAL
Certificate of analysis and SDS are available at
www.e-labeling.eu/TSF

Applications for Gallery and Arena automated analyzers are available upon request from the local sales representative. Information in the Application note can change without prior notice.

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CONTACT INFORMATION
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2015-05-22

Changes from previous version
Precautions updated.
General updates.

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