

## Total Sulfite, SO<sub>2</sub>/H<sub>2</sub>S Analysis

**By Acidification and Coulometric Detection**

**Applications include:** Total sulfites in foods, dissolved SO<sub>2</sub> and H<sub>2</sub>S in amine scrubbing solutions, and sulfites in geological materials and wallboard.



The **CM340 Total Sulfite, SO<sub>2</sub>/H<sub>2</sub>S Analyzer** is a complete analytical system allowing the direct measurement of total sulfites or dissolved SO<sub>2</sub>/H<sub>2</sub>S in a wide variety of sample matrices and concentrations. Combining a self-contained unit for the acidification of a sample (to evolve SO<sub>2</sub> and/or H<sub>2</sub>S), with a highly sensitive SO<sub>2</sub>/H<sub>2</sub>S detector, the CM340 easily handles solid or liquid samples with concentrations from ppm levels to 100% without user calibration. UIC's analyzers are rugged, accurate and adaptable to most applications. They are used extensively in industrial, research and educational laboratories worldwide. The CM340 system includes the following components pictured above:

### CM5014S SO<sub>2</sub> Analyzer

- No user calibration
- Wide, linear dynamic range
- Readability to 0.01 ug Sulfur
- User selectable display units
- Floppy disk drive for archiving data

### CM5130 Acidification Module

- 10, 25, 50 or 100 ml reaction vessels
- Selectable volume acid dispenser
- Internal air pump with flow controller
- Controlled sample heating and stirring

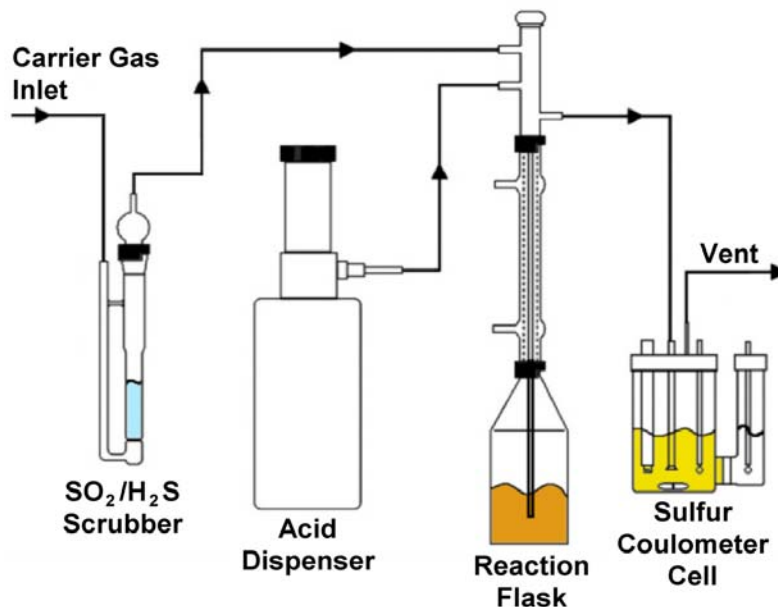
### Instrument Capabilities

A major advantage of the CM340 Total Sulfite, SO<sub>2</sub>/H<sub>2</sub>S Analyzer is the use of coulometric detection. Employing the principles of Faraday's Law, the CM5014S SO<sub>2</sub>/H<sub>2</sub>S Analyzer automatically measures the absolute mass amount of sulfur dioxide and/or hydrogen sulfide evolved from an acidified sample. No user-calibration is required and linear detection is available from less than 1 ug sulfur to over 10,000 ug sulfur. Using this 100% efficient coulometric process, relative standard deviations of 0.2% or better are common for standard material. For smaller concentrations, an absolute deviation of approximately 1 ug S is typical.

Additionally, it is possible to analyze either solid or liquid samples. Sample flasks are available in 10, 25, 50 and 100 ml sizes (with sample volume or mass determined by the sulfur concentration and desired level of accuracy). Solids or liquids may be weighed directly into the sample flasks. Alternatively, liquid samples may be syringe injected through a septum.

Oxidation times vary with sample type and temperature although 5 to 7 minute analyses are typical. To quicken SO<sub>2</sub>/H<sub>2</sub>S evolution, sample heating and stirring capabilities are included within the CM5130 Acidification Module. Other features include the ability to: select different acids; add wetting/emulsifying agents; and, modify the flow path and scrubbers to optimize a particular application.

## Principles of Operation



### Total Sulfite, SO<sub>2</sub>/H<sub>2</sub>S

Upon introducing a sample into the sample flask, the system is purged with a SO<sub>2</sub>/H<sub>2</sub>S-free carrier gas to eliminate atmospheric sulfur dioxide and hydrogen sulfide. At that point, the analysis is initiated by adding an aliquot of acid through the acid dispenser into the sample flask, causing sulfites to be evolved as SO<sub>2</sub> or releasing dissolved sulfur dioxide and/or hydrogen sulfide. Using the built-in heater and magnetic stirrer to facilitate the fast evolution of sulfites, the carrier gas transports the reaction products into the reaction cell within the CM5014S Analyzer. There, the resulting sulfur dioxide and/or hydrogen sulfide is automatically measured using absolute coulometric titration.

### Data Handling

Names, weights, volumes or areas of up to 50 samples can be entered, to be used by the CM5014S in calculating the final result. Analytical progress is digitally displayed in user-selectable units. A detailed report is printed while each sample is running that includes the final result. Upon completion of a series of samples, a one page report will print, summarizing the analysis of all 50 samples. The results can also be stored to diskette for further data handling.

## Ordering Information

### CM340 - Total Sulfite Analyzer

**Includes:** CM5014S SO<sub>2</sub> Coulometer and CM5130 Acidification Module with tools and accessories for the analysis of solid or liquid samples. *Must also choose* either CM5131 (10ml), CM5132 (25ml), CM5133 (50ml) or CM5134 (100ml) Sample Introduction Kit. (P/N CM340-01 110V, 50/60Hz) (P/N CM340-02 220V, 50/60Hz)



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