

# Sievers\*

## 5310 C Laboratory TOC Analyzer

### Overview

The Sievers\* 5310 C Laboratory Total Organic Carbon (TOC) Analyzer, the newest member of the Sievers 900 Series, offers superior productivity for laboratory TOC measurements. Automated calibration and verification procedures, four-minute analysis time, automated reagent adjustment, and the high-capacity 900 Autosampler combine for an unequalled level of efficiency, flexibility, and ease of use.

The 5310 C Laboratory Analyzer yields productivity gains with analysis times 30 percent faster than its Model 800 predecessor. The instrument enables complete unattended operation with an Autoreagent feature that calculates and applies the appropriate reagent flow rate for any sample without requiring user intervention. Additional productivity enhancements are realized with the optional 900 Autosampler, featuring random access capability and up to 120 sample positions.

### Municipal Water Applications

The 5310 C Laboratory Analyzer monitors raw and finished water TOC for plant optimization and USEPA compliance reporting. It uses USEPA-approved methodology (Standard Method 5310 C and the proposed USEPA Method 415.3) demonstrated to recover even the most difficult-to-oxidize organic compounds.

Facilities will benefit from the 5310 C Laboratory Analyzer's wide operating range, exceptional analytical performance, and ease of use. Water samples from a variety of applications with varying sample matrices and concentrations can be measured with the highest



efficiency and accuracy. The patented conductometric measurement technique allows for a single calibration curve with exceptional accuracy across a wide analytical range, eliminating the need for multiple calibrations and multiple ranges. This feature, along with the Autoreagent mode, allows all samples, regardless of concentration, to be fully oxidized without user intervention. The 5310 C is designed to simplify monitoring in even the most demanding applications.

### Key Benefits of the 5310 C Laboratory TOC Analyzer

#### Advanced Productivity and Efficiency

Automated operations, such as calibration, calibration verification, and Percent TOC Removal calculation combine with a four-minute analysis time for the most productive TOC analyzer available. The Autoreagent feature eliminates the time-consuming optimization process, automatically establishing optimal flow rates for each sample. The optional 900 Autosampler accommodates up to 68 sample vials, with random-access capability.



## Enhanced Ease of Use

The 5310 C Laboratory TOC Analyzer features best-of-class ease of use in setup, operation, and maintenance.

### *Intuitive Menu-Driven, Touch Screen Interface*

A large, color touch-screen display makes it easy to set up instrument parameters. Calibration and verification are made simple using a wizard-style guide to walk the user through the short procedure. Individual sample statistics are displayed in tabular format upon completion of analysis.

### *Low Maintenance Requirements*

Users are prompted automatically to perform preventive maintenance, which typically takes less than two hours per year. A state-of-the-art modular design facilitates speedy consumables replacement and preventive maintenance.

### *Self-Contained Enclosure*

No external reagent or gas supplies are required, saving valuable lab space and time. The Analyzer utilizes self-contained Sievers internal reagent packs that can be installed in minutes to achieve up to three months of uninterrupted service, depending on the application.

## Extended 12-Month Calibration Stability

The 5310 C Laboratory TOC Analyzer offers 12-month calibration stability, unlike competing analyzers that require weekly or even daily calibration. By following the on-screen prompts, users can select from a variety of single- and multi-point calibration routines. To further simplify operation, calibration calculations are performed and constants updated automatically. Calibration verification (cal check) routines are automated on both the Analyzer and the Autosampler, making it simple to quickly verify calibration as frequently as your application or SOPs require.

## Reliability

The 5310 C Laboratory Analyzer delivers superior reliability. The Analyzer combines innovative design improvements with carefully selected materials and components to ensure maximum uptime.

## Expanded Data Access

The 5310 C utilizes a USB port that allows data to be transferred from the 5310 C Laboratory Analyzer to a USB

flash memory drive without interrupting analysis. Data files can be opened directly in Microsoft Excel® without the need to convert data with proprietary software. Standard serial and parallel ports are also provided.

## Accessories and Options

### **900 Autosampler and DataPro 5310 C\* Software**

For laboratory use, the 900 Autosampler provides random access capability with high sample capacity (up to 63 positions for 40-mL vials and up to 120 for 17-mL vials), for even the most demanding laboratory applications. The Sievers DataPro 5310 C software integrates the 900 Autosampler with the 5310 C Laboratory Analyzer to offer a host of productivity-enhancing features, such as automated calibration and calibration verification protocols. DataPro 5310 C also gives users full sampling flexibility with custom sample protocols and user-defined sampling capabilities.

### *Accessing Check Standards – Simplifying Quality Control*

In addition to the 900 Autosampler's 63 vial positions, a standards rack provides an additional five vial positions that can be used to check standards that are typically run with each batch of samples. Through the 5310 C DataPro software, the Autosampler can be programmed to perform a cal check between samples, at a frequency determined by the user. Alternatively, the standards rack can be used for additional sample vial capacity.

### *Compact, Space-Saving Size*

The 900 Autosampler's slim 28.5 cm (11.4 in) profile requires minimal bench space. When operated with the Sievers 5310 C Laboratory Analyzer, only 19.2 cm (7.6 in) wide, the two units occupy just 0.23 m<sup>2</sup> (2.5 ft<sup>2</sup>) of surface area.

### *Dedicated Rinse Station*

The optional rinse station and wash pump provide a flush of the sample inlet system with a flowing water source, maximizing analytical performance of sample sets with widely varying concentrations.

### **DataPro 5310 C\* Software**

The DataPro 5310 C software, which integrates the 900 Autosampler with the 5310 C Laboratory TOC Analyzer, features a host of time-saving features to maximize productivity and ensure easy TOC data management.

### Ease of Use

The intuitive, easy-to-use DataPro 5310 C runs on the Microsoft® operating system (98, ME, NT, 2000, and XP) with a familiar Windows interface design, and features menus, editing options, and overall interface designed for ease of use and increased productivity. DataPro 5310 C is fully network compatible and supports remote file access.

### Visually Enhanced

The new vial configuration window maps vial placement in the 900 Autosampler for ease in implementing sample protocols. The DataPro 5310 C software allows users to customize and configure screens and printouts specific to their needs, and features on-screen color highlighting, providing a convenient visual reference of real-time sample status.

### Automated System Protocols

Calibration is fully automated through DataPro 5310 C. The operator need only select the desired calibration (single- or multi-point), and the software initiates calibration standards analysis, manages data collection, and performs all necessary calculations. Calibration results are displayed in a summary screen for review. If the user chooses to apply the new calibration, the new

calibration constants are automatically uploaded to the Analyzer.

DataPro 5310 C also provides a protocol for automatic determination of Percent TOC Removal. If the user selects this protocol, the software prompts the user to identify vials as influent or effluent samples, and then automatically reports Percent TOC Removal with the individual TOC results for each vial.

### Autoreagent Adjustment Feature

When Autoreagent control is specified, the DataPro 5310 C software works with the 5310 C Analyzer and 900 Autosampler, adding precisely the reagent volume required for accurate sample analysis. Use of the Autoreagent feature eliminates the potentially lengthy optimization and data interpretation process.

### 900 Inorganic Carbon Removal (ICR)

The enhanced 900 ICR reduces inorganic carbon levels in sample streams with high IC/TOC ratios to produce more accurate TOC results. This next-generation version is quieter, more compact, and attaches to the side of the 5310 C Laboratory Analyzer

The screenshot displays the DataPro 5310 C software interface. At the top, a window titled "Protocol - TOC Removal" shows a table with columns: Vial No., Group Name, Type, # Vials, # Reps, # Rejects, and Acid Oxid. The table contains six rows of data for influent and effluent samples. Below this, the main software window is visible, showing a menu bar, a toolbar, and several data tables. A "Validation Calculations" dialog box is open in the foreground, displaying the following information:

Group Name	TOC
Influent 1	2.91 ppm
Influent 2	2.91 ppm
Influent 3	2.91 ppm
Effluent 1	1.91 ppm
Effluent 2	1.91 ppm
Effluent 3	1.91 ppm

Validation Calculations:  
Influent = 2.91 ppm  
Effluent = 1.91 ppm  
TOC Removal = 34.4 %

Buttons: Influent 1, Influent 2, Influent 3, OK

Main DataPro 5310 C Window

TOC Removal Percentage Protocol and Results Windows

# 5310 C Laboratory TOC Analyzer Specifications

## Operation Specifications<sup>1</sup>

Range	0.03 ppb to 50 ppm
Precision	< 1% RSD
Accuracy	± 2% or ± 0.5 ppb, whichever is greater
Sample Type	Autosampler or discrete grab sample
Display Readout	3 significant digits
Calibration	Typically stable for 12 months
Analysis Time	4 minutes
Sample Temperature	1–95° C (34–203° F)
Ambient Temperature	10–40° C (50–104° F)
Instrument Sample Flow Rate	0.5 mL/min

## Analyzer Specifications

Outputs	Serial (RS-232) output (2); USB port (1); parallel printer port (1)
Display	Quarter-VGA, color touch-sensitive LCD display
Power	Universal Power Supply: 100–240 ±10% VAC, 100 W, 50/60 Hz
Dimensions	H: 48.3 cm (19.0 in); W: 19.2 cm (7.6 in); D: 48.0 cm (18.9 in)
Weight	14.3 kg (31.5 lb)
Safety Certifications	UL/cUL, CE

## Consumables

UV Lamp	6 months
Acid Reagent	As needed, typically 6 months (285-mL)
Oxidizer Reagent	As needed, typically 3-month stability; available in 150- or 300-mL cartridge

## Recommended System Requirements for DataPro 5310 C Software

System Component	Recommended Requirements		
Operating System	Windows 98/ME	NT 4.0 Service Pack 5.0	Windows 2000/XP
RAM	128 MB	128 MB	256 MB
CPU	300 MHz	300 MHz	500 MHz
Available Hard Disk Space	75 MB	75 MB	75 MB
Screen Resolution	1024 x 768	1024 x 768	1024 x 768
Screen Color	65K (high color)	65K (high color)	65K (high color)
Mouse / Pointer	Required	Required	Required
Serial Port	Optional to run program; required to connect to the Analyzer		
Printer	Optional to run program; required to print protocols and results		
CD-ROM Drive	Required for installation		

## 900 Autosampler Specifications

Capacity	63 (sixty three) 40-mL vials; 120 (one hundred twenty) 17-mL vials; Five 40-mL standard vials
Power	Universal Power Supply: 75 W, 100-240 VAC, 50-60 Hz, 1.8 A; No manual voltage adjustments are required. The power supply unit has international approvals to BS, UL, CSA and VDE standards
Dimensions	H: 50.8 cm (20.3 in); W: 28.5 cm (11.4 in); D: 48.5 cm (19.4 in)
Weight	15 kg (33.1 lb)
Safety Certifications	C Tick and CE

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<sup>1</sup> Stated analytical performance is achievable under controlled laboratory conditions that minimize operator and standards errors.

The Sievers 900 Series TOC Analyzers are protected by one or more of the following US and foreign patents: US 6271043; US 6228325; US 5976468; US 5902751; US 5837203; US 5820823; US 5798271; US 5750073; US 5443991; US 5132094; EP 0897530; FR 0897530; GB 0897530; DE 69702516.0-08; EP 0471067. Other patents pending.



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