

HUMAN HEALTH

ENVIRONMENTAL HEALTH

THE SENSITIVITY  
AND STABILITY  
YOU NEED  
TO SUCCEED



## CLARUS SQ 8 GC/MS

Gas Chromatograph/Mass Spectrometer

  
**PerkinElmer**<sup>®</sup>  
*For the Better*

# SENSITIVITY STABILITY VERSATILITY



With the Clarus® SQ 8 GC/MS from PerkinElmer, laboratories of all types and sizes finally have a cutting-edge tool that offers both unsurpassed sensitivity and unparalleled stability. Why settle for compromised performance when there's now a solution that gives you consistent ultra-trace detection limits time after time? Imagine the increased confidence in your results. Imagine the increased productivity in your lab.

Engineered around an advanced, fast quadrupole mass spectrometer, the Clarus SQ 8 GC/MS acquires a large number of spectra (12,500 amu/sec) across every GC peak. This enables the clear definition and quantification of extremely narrow chromatographic peaks to deliver exceptionally accurate and precise data. The instrument also gives you the widest mass range available in gas chromatography (1-1200 u), and detection limits never before seen with a single quadrupole GC/MS.

## **Better Performance Means Better Results.**

From high throughput applications to highly regulated environments, the Clarus SQ 8 is the ideal GC/MS solution for virtually any laboratory. No matter how many samples you're running, how tough your matrices, what your detection limit or speed requirements, the instrument has been engineered with a range of innovative features to help meet the unique challenges you face every day.

### **SMARTsource™ (Simplified Maintenance And Removal Technology)**

- Easiest source to access and maintain (EI and CI)
- No tools required to remove or disassemble.

### **Fastest conventional GC oven available**

- Heats up and cools down more rapidly than other ovens for unsurpassed productivity.
- Compatible with traditional GC columns of standard dimension.

### **World's most sensitive detector**

- Unique Clarifi™ detector delivers exceptional sensitivity by eliminating background noise and maximizing analyte signals.

## **The Complete Solution—Start To Finish**

PerkinElmer gives you a complete, seamlessly integrated, worry-free GC/MS solution with:

- Exceptional instrumentation
- Compatibility with virtually all sample introduction systems, including PerkinElmer's world-class TurboMatrix™ Headspace and Thermal Desorption systems
- Consumables and accessories designed for optimum chromatography performance
- The world's most trusted service and support network, OneSource®

# INNOVATIVE DETECTOR. UNPARALLELED DETECTION.

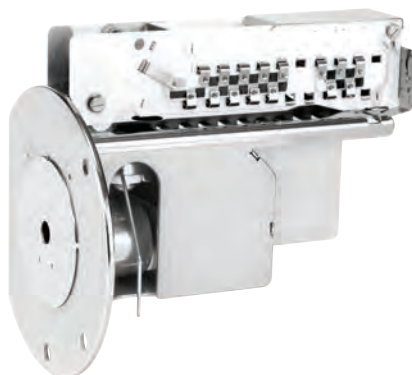


The Clarus SQ 8 GC/MS sets a new benchmark for sensitivity and stability with a unique Clarifi detector that delivers both enhanced performance and superior longevity.

Durable and reliable, the Clarifi detector gives you the flexibility to choose your ideal level of sensitivity and dynamic range, allowing you to adjust the instrument's performance to suit a particular analysis. The system's extreme sensitivity also delivers superior throughput and productivity by minimizing instrument calibration requirements and reducing the need for sample preparation and concentration.

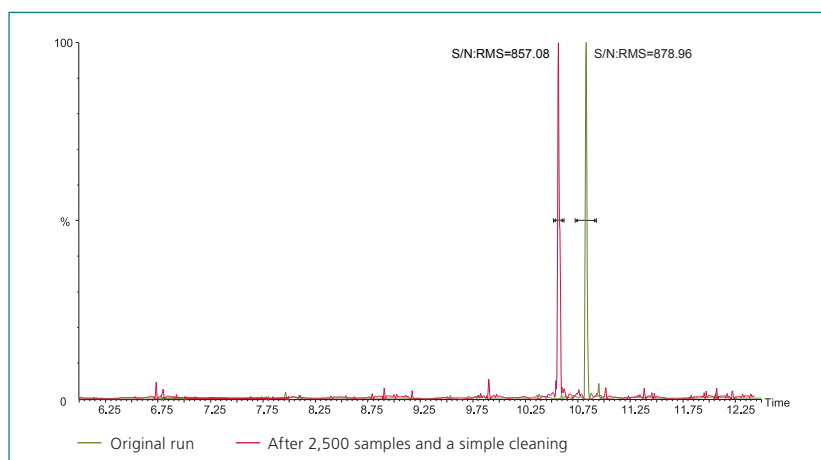
**Patented High-Voltage Conversion Dynode**—Optimizes electron multiplication for greater sensitivity and longer lifetime.

**Constrictor Lens**—Further focuses the ion beam as it leaves the analyzing quadrupole.

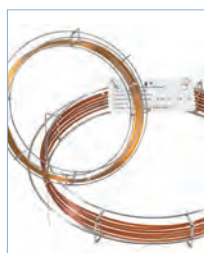


**Electron Multiplier**—Discrete dynode design outperforms and outlasts low-cost continuous dynode systems.

**Ion Deflector**—Turns the ions, filtering off any noise and passing only ions of interest to the high-voltage conversion dynode for exceptional analyte signals and better detection limits.



With its world-leading stability, the Clarus SQ 8 GC/MS can be returned to as-new performance levels with a simple, user-executable cleaning. In this example, note the chromatographic consistency for 1 picogram of OFN before and after the running of 2,500 high matrix environmental samples.



## Consumables Highlight—Elite™ MS Columns

Ensure optimum performance of your Clarus SQ 8 GC/MS with PerkinElmer's specialty phase GC/MS columns offering exceptionally low bleed in a variety of lengths and film thicknesses. Tested with the tightest QC specifications in the industry for column bleed, selectivity and efficiency, Elite MS columns provide utmost confidence in your qualitative and quantitative results. Our extensive line includes Elite-5MS, 17MS, 35MS, 624MS and VMS columns, so you can be sure of getting the ideal solution no matter what your application.

# GREATER STABILITY FOR SIMPLER METHOD DEVELOPMENT



While other instruments struggle to replicate sensitivity specifications from one day to the next, the Clarus SQ 8 GC/MS gives you the same exceptional detection limits—even with the most complex matrices—over the lifetime of the instrument.

This unparalleled stability allows you to spend less time on method development by dramatically reducing calibration requirements.

## Engineered for Greater Precision and Longer Life.

The unrivaled stability of the Clarus SQ 8 GC/MS is made possible by a series of perfectly integrated, precision-engineered components designed to deliver uncompromising performance and reliability.

### Ion-filtering, cleanable pre-quads

- Effectively remove non-target ions before they reach the analyzing quadrupole for enhanced stability, stronger signals and reduced maintenance.
- Can be cleaned to return the instrument to as-new performance levels ensuring accurate and consistent data over time.
- Reduce the risk of contaminating the analyzing quadrupole.

### Long-lasting Clarifi electron multiplier detector

- Superior number of dynodes for unsurpassed sensitivity and longevity.
- High-voltage conversion dynode optimizes ion/electron exchange efficiency to produce stronger signals.

### Roughing pump

- High-capacity solution for reliable long-term performance.
- Ideal for laboratories running large numbers of environmental water samples.

## More Samples. Less Time.

The Clarus SQ 8 GC/MS combines an array of innovative features to speed and simplify your journey from sample to results.

### Unparalleled stability

- Minimizes calibration and method development requirements for maximum instrument uptime.

### High-performance front-end GC system

- Features a patented oven with the fastest heat-up and cool-down times for shorter injection-to-injection and analytical cycle times, helping you maximize productivity and efficiency.

### Durable, long-lasting Marathon™ filament

- Works with both EI and CI sources and is highly resistant to demanding solvents and complex matrices.
- Lasts for years even under the toughest conditions, reducing replacement downtime and costs.

### Swafer™ Micro-Channel Flow Technology (optional)

- Enhances productivity and expands analytical capabilities by allowing quick and easy switching between multiple inlet techniques and detector types.
- Fast, easy configuration optimizes instrument uptime and speeds analyses.

### Integrated, best-in-class autosampler

- Top mounted on instrument for consistently precise sample delivery, never bending the needle.
- Features 108-vial capacity and accesses both injection ports for optimum analytical flexibility and efficiency.

### Fast and simple source removal/replacement

- Requires no tools and can be performed in a matter of seconds.



# INSTANTLY CLEAN YOUR SOURCE. QUICKLY RETURN TO WORK.



Capable of both EI and CI ionization, the SMARTsource (Simplified Maintenance And Removal Technology) on the Clarus SQ 8 GC/MS has been designed for ultimate simplicity, flexibility and productivity. Switching sources can be done in a matter of seconds by simply twisting and pulling—no tools required, no wires to disconnect.

Cleaning the source is equally easy and can be performed by the user. So even if you're running tough matrices, you won't be slowed down by time-consuming source cleanings and replacements.

## Fewer Parts. Greater Ease.

With very few parts, the SMARTsource is exceptionally robust and easy to maintain. Each component is clearly marked for simple reassembly, and reconfiguring between EI and CI can even be performed in less than 3 minutes with a quick-conversion kit.

Since the source is removed from the front of the Clarus SQ 8 GC/MS, the analyzing quadrupole is never exposed, minimizing the risk of contamination to ensure more reliable data.



A simple twist and pull is all that is required to access the tool-free SMARTsource on the Clarus SQ 8 GC/MS.



## Work Faster. Work Smarter.

No matter what your throughput requirements or sample types, the Clarus SQ 8 GC/MS can streamline your workflows with a suite of productivity-enhancing technologies.

### Universal Programmable Split/Splitless (PSS) Injector

- Enables large-volume split, splitless and on-column injections of volatile solvents with one injector.
- Eliminates the need for expensive cooling agents.
- Offers greater application flexibility.

### Headspace and Thermal Desorption Sample Introduction Systems

- Dramatically reduce sample preparation time.
- Simplify a broad range of specialized applications including air monitoring and flavor/fragrance analysis.

### Full-Color, Multi-Language Touch-Screen Interface

- Speeds and simplifies system accessibility and usability.



## Consumables Highlight—Injector Port Liners

PerkinElmer offers a range of rugged, matrix-tolerant liners ideal for virtually any application. Suitable for split/splitless injections, the liners are designed with a variety of flow paths to allow for full vaporization. Deactivated liners—with and without glass wool—are also available to prevent the degradation of active compounds.

# ELEMENTS OF A SUPERIOR GC/MS SOLUTION



## Better for Your Lab. Better for the Planet.

The Clarus SQ 8 GC/MS has been thoughtfully engineered to lower both operating costs and environmental costs:

- Hydrogen compatibility—Offers an alternative to helium to preserve our natural resources.
- Programmable Pneumatic Control (PPC)—Saves gas by automatically adjusting flows and shutting down the system if normal levels are exceeded.
- Standby settings—Reduce the flow of gas when the instrument sits idle for long periods.
- Sleep method setting—Allows the instrument to go into sleep mode when not in use, dramatically reducing power consumption.

**Intuitive TurboMass™ Software**—Simplifies sample analysis and offers fast data review and reporting.

**Clarifi Detector**—Provides unparalleled sensitivity for more reliable results, lasting longer than any other available detector for minimum replacement costs.

**SMARTsource**—Easy to remove and clean—without tools—for greater instrument uptime and sample throughput.



**Two Pumping Systems**—Deliver the ideal level of performance to fit your analytical and budgetary needs.

**Ion-Filtering Pre-Quads**—Remove ions outside the range of interest before they reach the analyzing quadrupole for enhanced stability, stronger signals and reduced maintenance.





**Autosampler**—Optimizes throughput for enhanced laboratory productivity.

**Touch-Screen Interface**—Speeds and simplifies control of the instrument in your choice of multiple languages.

**GC Oven**—Delivers the fastest heat-up and cool-down in the industry, reducing injection-to-injection times for higher sample throughputs and greater operational efficiencies.

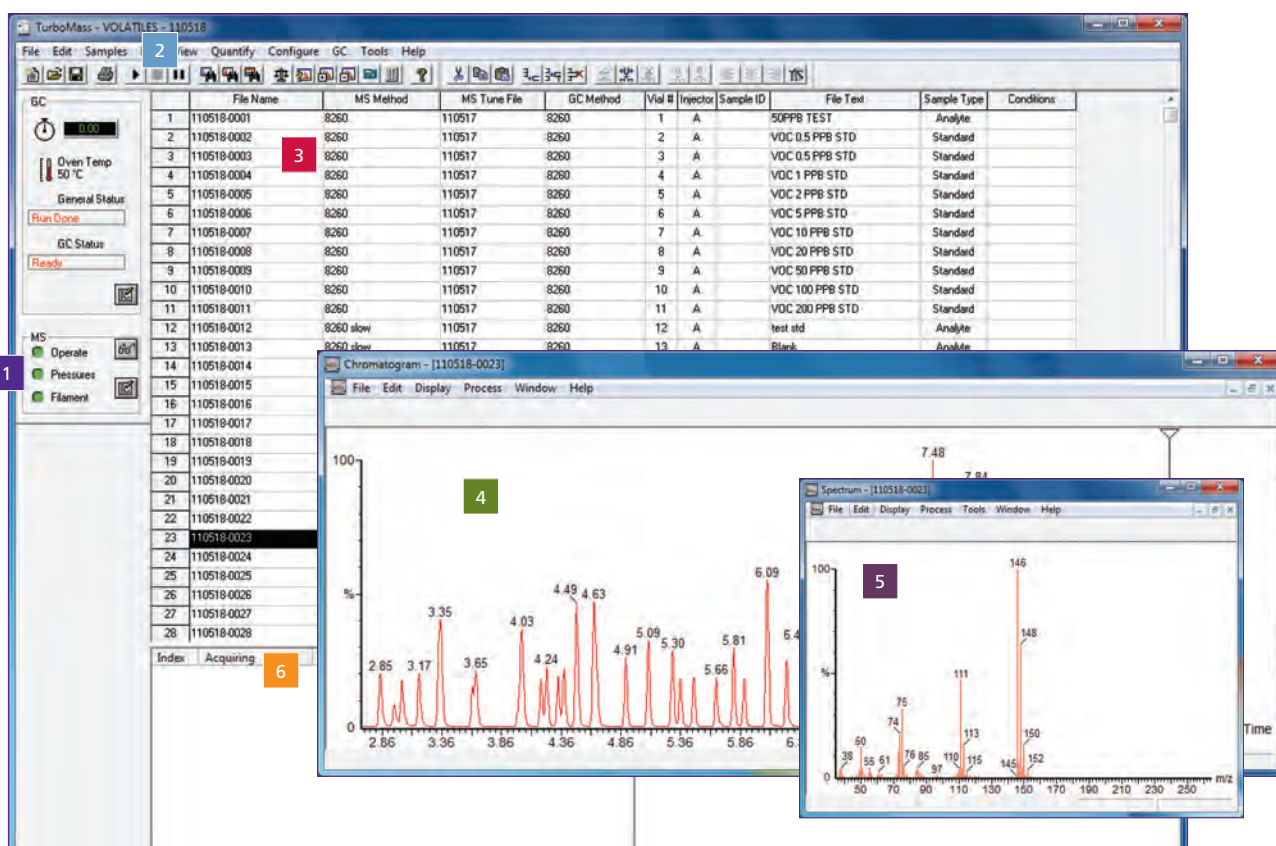
**Swafer Micro-Channel Flow Technology**—An optional add-on that automates the process of switching between multiple inlet techniques, detector types or backflush/heartcutting systems for superior productivity and analytical flexibility.



# THE TOOLS YOU NEED AT YOUR FINGERTIPS



As its name implies, the TurboMass software on the Clarus SQ 8 GC/MS gives you fast, precise answers. Designed for both routine and advanced users and applications, the intuitive, Windows® 7-compatible interface simplifies and streamlines all data handling and reporting functions. All the information you need—from chromatogram displays to library searches—is never more than a couple of clicks away.



- 1 Quick-glance instrument status display gives you instant information on operating conditions for both your GC and MS.
- 2 Simply highlight specific samples and click the "Run" button to start your analyses.
- 3 Familiar, intuitive spreadsheet format can be easily edited for maximum flexibility in how you run your samples.
- 4 Clicking the "View Chromatogram" icon reveals detailed chromatograms for all highlighted rows.
- 5 Spectral data can be obtained for any peak in a chromatogram by simply right-clicking on it.
- 6 Multiple tasks can be conveniently scheduled and executed using the Analysis and Reprocessing Queues.

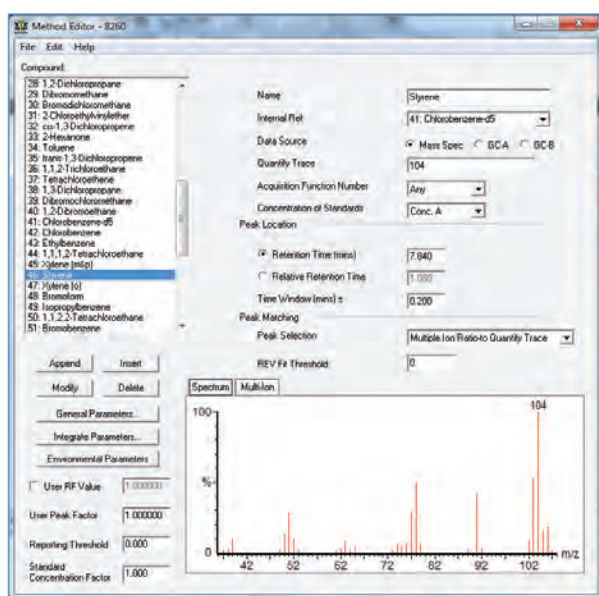


# A WINDOW TO SIMPLER ANALYSES



## AutoBuild™

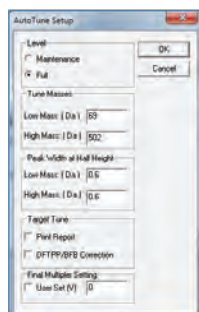
Gives you all the tools you need to quickly and easily process data. Automatically identifies and names compounds by using the library. Speeds development of quantitative methods by importing all necessary information including retention time from your chromatogram and background-subtracted spectrum. Can even be set up to automatically name your peaks.



The AutoBuild feature automatically pulls together all information for a set of peaks to simplify and speed up method development.

## UltraTune™

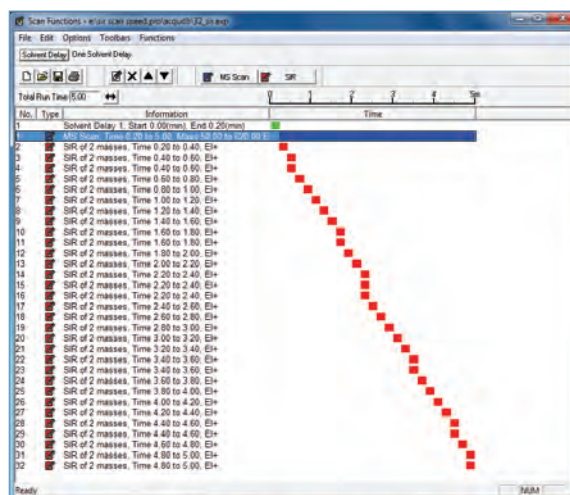
Automatically tunes the MS for enhanced sensitivity, stability and reproducibility of results. Available with two options:



- Standard Tune: Optimized for environmental ion ratio criteria.
- Custom Tune: A user-customizable environment that allows you to change settings to achieve higher levels of sensitivity or resolution to suit the needs of a particular analysis.

## Selected Ion and Full Ion (SIFI)™ scanning

Allows the instrument to be run in Selected Ion Monitoring (SIM) and Full Scan modes—simultaneously, in one chromatographic run—for improved detection limits, superior data collection, and improved productivity. Up to 32 Full Scan and/or SIM acquisition functions can be acquired in parallel, in series, or in combination. SIFI scanning also saves time and reduces solvent costs by reducing or even eliminating labor-intensive pre-concentration and sample clean-up steps.



Visually driven interface clearly displays SIM and Scan mode data for faster, simpler method development.

## LIMS compatible

Export data to Laboratory Information Management Systems for further review, recording or customization.

## Fast, simple, flexible reporting

With over 70 standard templates designed for different laboratory types (food, environmental, forensics), TurboMass allows report generation with just a few simple clicks.

## Communiqué

Enables you to format and present your data in customizable reports, eliminating manual calculations and spreadsheets.

# EXPANDING YOUR GC/MS ANALYTICAL CAPABILITIES



As the recognized world leader in GC sample handling, PerkinElmer offers an array of innovative front-end technologies to help you get even more out of your GC/MS system.

Our TurboMatrix Headspace and Thermal Desorber solutions offer unparalleled precision for specialized applications and enable PerkinElmer to be the single source provider for all your GC needs—from sample handling to data handling. Whether you're running high numbers of samples on a regular basis, occasionally troubleshooting QC problems, or handling difficult matrices, our systems deliver exactly the level of performance and throughput you need.

## TurboMatrix Headspace and Headspace Trap Samplers

With three Headspace models and two Headspace Trap samplers, PerkinElmer has the ideal solution for virtually any analysis involving volatile compounds—from organics in environmental matrices, or alcohol levels in blood, to aroma and flavor in food.

Engineered for unparalleled sensitivity, precision and ease-of-use, TurboMatrix Headspace solutions feature unique pressure-balanced sampling that allows samples to be introduced into the column without using a gas syringe or metal loop. This produces sharper peaks, provides exceptional reproducibility, and eliminates carryover on metallic surfaces and any possible fractionation due to pressure changes in the syringe, ensuring more accurate and reliable results.



### Consumables Highlight—Vials

Tested to meet the most stringent application requirements and guaranteed for fit and compatibility, our chemically inert vials are custom-manufactured with high temperature and pressure tolerance to ensure reliable performance.



## TurboMatrix Thermal Desorbers

PerkinElmer's suite of Thermal Desorbers includes five available models designed to provide exactly the features, capacities and capabilities your application requires.

From single-tube configurations to automated 50-tube systems, every sampler can be optimized with a Programmable Pneumatic Control (PPC) option, the simplest, most convenient way to set gas flows and pressures. Not only does this revolutionary technology simplify a broad range of analyses—from air toxics to volatile organics in food packaging—it also ensures the best analytical performance available.



### Consumables Highlight—SVI™ Tubes

Our patent-pending, multi-bed construction SVI tubes extend the hydrocarbon range past naphthalene while retaining lighter compounds. This unique construction enables larger sample volumes to be analyzed and enhances detection limits. The multi-bed design meets the challenges presented by today's industry regulations, including current EPA standards for air monitoring.

# THE COMPLETE PACKAGE FROM SAMPLE PREP TO SERVICE



## Bringing Reproducibility To Solid Phase Extraction (SPE).

At PerkinElmer, we understand the importance of sample preparation in the analytical process. Often accounting for 60% of your timetable, it has a fundamental impact on every subsequent stage of your analysis.

To avoid upfront errors and ensure the most accurate, reliable results, we offer a line of cutting-edge Supra-Clean™ and Supra-Poly™ cartridges and columns that are bringing reproducibility to SPE. With Precise Bed-Technology™ and the industry's most stringent quality control systems, our manufacturing processes yield a variation in precision of just  $\pm 1\%$ .

Designed for a broad array of analytes and matrices, our revolutionary SPE solutions offer the extraction capabilities you need to prepare virtually any sample for GC/MS.

Experience the difference for yourself. Or—to be more exact—experience the uniformity. And see how a better sample preparation solution at the start can lead to more reliable data in the end.



## The Number One Name in Service and Support.

Nothing has a greater impact on productivity or return on investment than instrument uptime. And no one does more to ensure your chromatography systems perform day in and day out than PerkinElmer.

With OneSource Laboratory Services, you have the world's largest and most respected global service and support network at your disposal. We go beyond just maintenance and repair of instrumentation. We incorporate laboratory asset management as part of our customers' business equation—a partner with proven results in improving efficiencies, optimizing operations and providing cost certainty across the globe. No matter what you need, our team of certified, factory-trained Customer Support Engineers is just a phone call away, 24 hours a day, seven days a week.



Operating in more than 150 countries with more than 400,000 assets currently under care, OneSource offers the most comprehensive portfolio of professional laboratory services in the industry, including complete care programs for virtually every technology and manufacturer. By allowing you to consolidate all your service contracts under a single supplier, and by providing responsive, expert technical advice and support at a moment's notice, we ensure your instrumentation—and your lab—is running at optimum levels at all times.




Whether it's care and repair, validation and compliance, asset management and laboratory relocation, software and hardware upgrades or education and training, OneSource is... the ONE you can count on.

# FIND THE PERFECT BALANCE OF SENSITIVITY AND STABILITY



With a variety of configurations featuring a range of pump capacities and source types, the Clarus SQ 8 GC/MS is sure to offer the ideal, world-class solution to suit your specific application and analytical needs.

System Configurations	Clarus SQ 8S	Clarus SQ 8T	Clarus SQ 8C
Ionization Type(s)	EI	EI	EI/CI
Signal to Noise Specification	650:1	800:1	800:1
Turbomolecular Pump Capacity	75 L/sec	255 L/sec	255 L/sec
Pump-Down Time	< 5 mins	< 3 mins	< 3 mins

	Markets	Applications
	From organic contaminant monitoring to trace and toxic metals and chemicals determination, we deliver expertise, systems and comprehensive services required to monitor for harmful contaminants in air, water and soil.	Volatiles in Soil & Water by Headspace Semivolatiles in Soil & Water
	For organizations charged with protecting the health of people through safe, nutritional and high-quality food and safe consumer products, we understand regulatory requirements, and our solutions provide accurate results for you.	Volatile Flavors & Fragrances by Headspace Pesticides in Fruits & Vegetables
	For trace evidence, our instruments are able to get the most information from the smallest sample provided, while preserving the maximum amount for other tests.	Fire Accelerants by Thermal Desorption Drugs of Abuse

PerkinElmer, Inc.  
940 Winter Street  
Waltham, MA 02451 USA  
P: (800) 762-4000 or  
(+1) 203-925-4602  
[www.perkinelmer.com](http://www.perkinelmer.com)



For a complete listing of our global offices, visit [www.perkinelmer.com/ContactUs](http://www.perkinelmer.com/ContactUs)

Copyright ©2011–2013, PerkinElmer, Inc. All rights reserved. PerkinElmer® is a registered trademark of PerkinElmer, Inc. All other trademarks are the property of their respective owners.

009724B\_01

Printed in USA