

Gas Chromatograph Mass Spectrometer

GCMS-TQ RX Series

UFMS
ULTRA FAST MASS SPECTROMETRY



GCMS-TQ™ RX Series

Adaptive by Design, Reliable by Nature

The environment surrounding analytical operations is continually evolving. The GCMS-TQ RX Series is a triple quadrupole mass spectrometer that integrates Shimadzu’s advanced technologies to meet the diverse and growing demands of modern analytical laboratories. Based on the “3R” concept — Reliable, Resilient, and Responsible — the series delivers consistent performance alongside exceptional ease of use. In addition to highly reliable and stable hardware, the GCMS-TQ RX Series features intuitive software with advanced automation technologies. Together, this integrated, versatile system adapts to a wide range of analytical needs and changing operational workflows, providing laboratories with new value and enabling more efficient analytical operations.



GCMS-TQ8040 RX

Delivering highly sensitive multi component simultaneous analysis, the system improves operational efficiency through Analytical Intelligence, while also providing performance as a single GC-MS. The GCMS-TQ RX Series is a versatile triple quadrupole GC-MS that demonstrates high performance across a wide range of application fields.

01
Flexibility with Purpose

02
Proven Performance

03
Built for Evolving Labs



GCMS-TQ8050 RX

Equipped with a high-efficiency detector and multiple noise-reduction technologies, the system enables quantitative analysis of ultra-trace compounds, even at the femtogram level. Furthermore, the Boosted Efficiency Ion Source (BEIS), combined with a long-life filament, maximizes both analytical sensitivity and long-term stability.

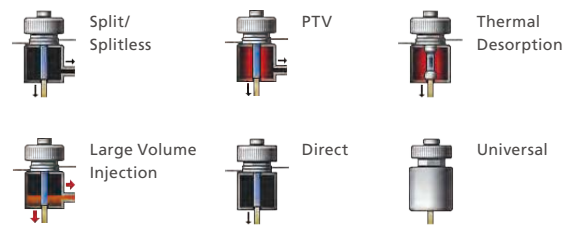
Flexibility with Purpose



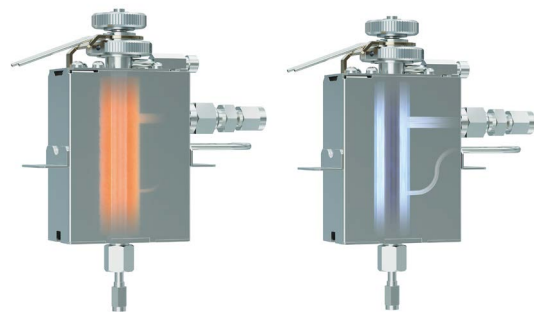
Multi-Mode Injection Unit Enhances Operational Efficiency

Supports Multiple Injection Modes and Enables More Efficient Method Development

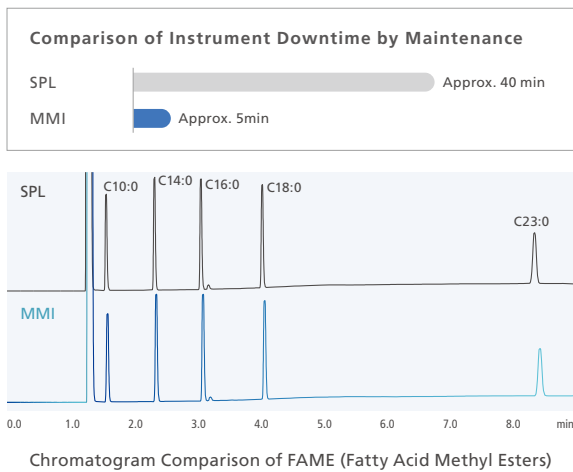
The Multi-Mode Injection Unit (MMI) supports a wide range of injection modes in a single unit, including split/splitless (SPL), programmable temperature vaporization (PTV), large-volume injection (LVI), direct injection, and thermal desorption/extraction (TD/TE). Dedicated software with an intuitive user interface enables easy method creation and seamless method transfer, simplifying analytical workflows.



High Performance with Minimal Downtime

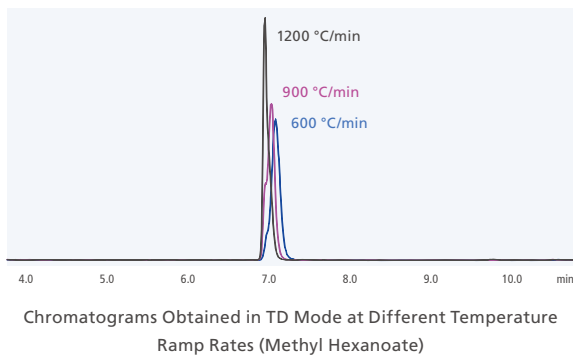


Shimadzu's proprietary thermal insulation technology achieves both high temperature stability and rapid heating and cooling. While maintaining excellent data compatibility with conventional split/splitless inlets, it also significantly reduces downtime for inlet maintenance, such as liner replacement.



Measurement Using the Thermal Desorption (TD) Mode

The MMI can heat samples at up to 1200 °C/min, enabling rapid thermal desorption.

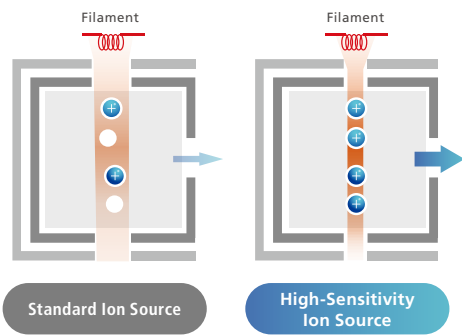


Ion Source for Diverse Analytical Needs

Boosted Efficiency Ion Source

Optimizing the focus of the electron beam in electron ionization (EI) maximizes ionization efficiency to the highest possible level, enabling detection at the attogram order.

* This ion source is compatible with the TQ8050 RX.



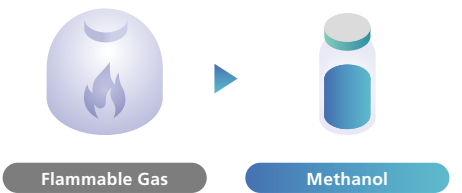
Smart EI/CI Ion Source

The Smart EI/CI ion source acquires CI data without switching the ion source, and without losing the sensitivity of the commonly used EI. Combining EI mass spectra with molecular weight information obtained from CI results in highly accurate qualitative analysis.



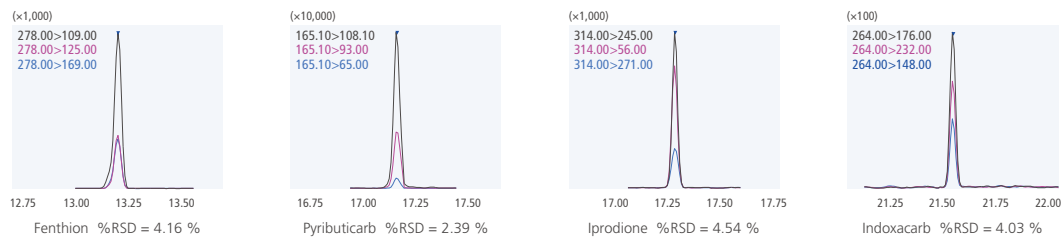
Solvent-Mediated Chemical Ionization (SMCI) Unit

Instead of using conventional flammable gases, SMCI introduces methanol into the ion source to perform CI analysis. By eliminating the need for high-pressure flammable gas cylinders, this approach enhances safety and reduces running costs.

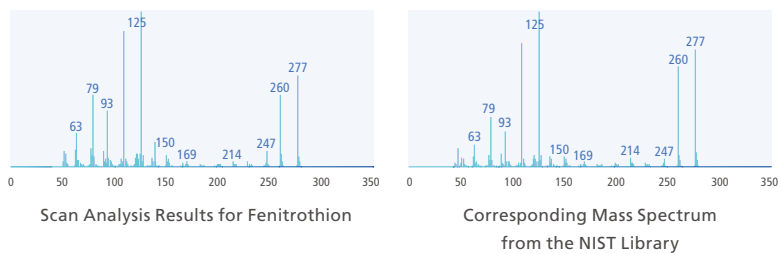


Covering Applications from Multicomponent Simultaneous Analysis in MRM Mode to Single Quad GC/MS Mode

Shimadzu's proprietary UFsweeper technology efficiently removes ions from the collision cell, achieving high CID efficiency and high-speed ion transport. As a result, a sufficient number of transitions can be secured even during high-speed analysis, enabling simultaneous multicomponent analysis of hundreds of compounds in MRM mode.



Example of Simultaneous Analysis of 439 Pesticide Compounds (5 pg/μL Each)



The GCMS-TQ RX Series delivers mass spectra and SIM results equivalent to those obtained with a single quad GC-MS system. From quantitative analysis using MRM and SIM to qualitative analysis by scan mode, a single instrument supports the entire analytical workflow.

Proven Performance

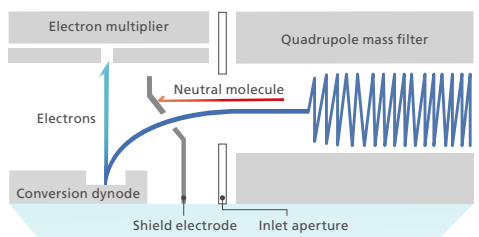
Movie 

New High-Sensitivity Technology

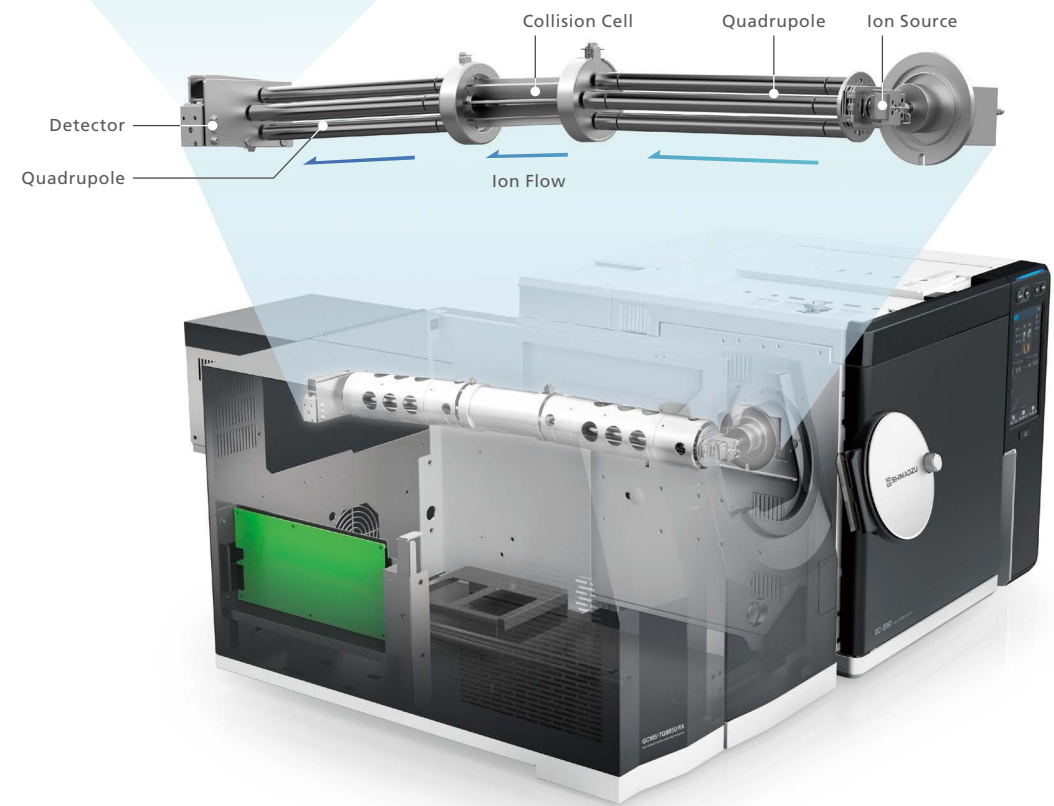
Off-Axis Ion Optics

The Off-Axis ion optics eliminate neutral noise, such as metastable helium ions, without compromising sensitivity.

New Low-Noise, Highly Robust Detector

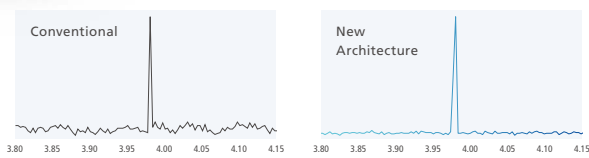


The GCMS-TQ8050 RX is equipped with a newly developed, patented detector that combines the latest noise-reduction technologies with high amplification performance. Combining this with Off-Axis ion optics creates a dual Off-Axis configuration that significantly reduces noise originating from neutral species. In addition, this new detector offers excellent robustness, ensuring stable and reliable long-term performance.



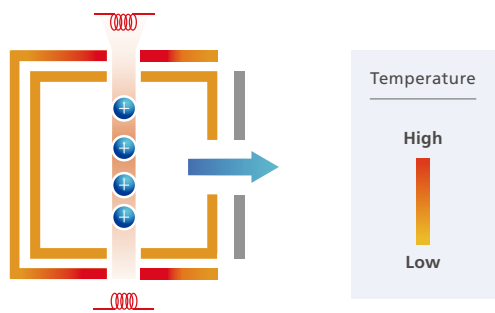
A New Architecture

A newly designed architecture reduces baseline noise to the lowest possible level, enabling highly reliable detection of peaks at lower concentration levels.



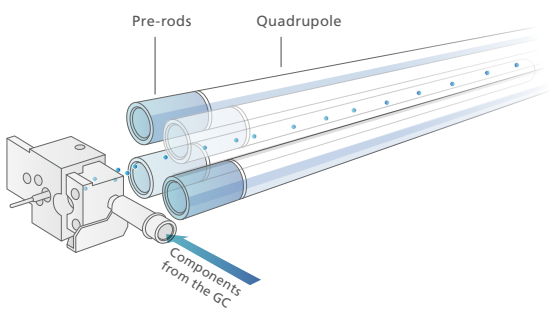
Detector

Robust Mass Spectrometer



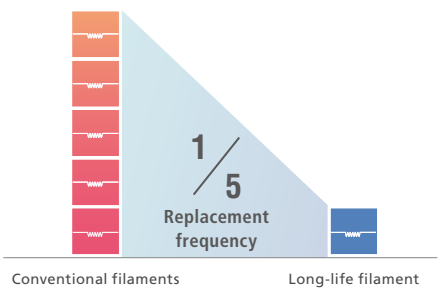
Highly Sensitive and Stable Ion Source

Increasing the distance between the filament and the ion source reduces the influence of the filament's electric potential. In addition, a shield blocks radiant heat generated from the filament, helping to maintain a uniform ion source temperature. This prevents the formation of localized hot spots, resulting in higher analytical sensitivity. (Patent: US7939810)



Quadrupole Mass Filter Equipped with Pre-Rods

A high-accuracy mass filter equipped with pre-rods, combined with patented electric field control technology, delivers excellent mass separation performance. In addition, the pre-rods minimize contamination of the quadrupole, eliminating the need for quadrupole maintenance.



Long-Life Filament Reduces Replacement Frequency to One-Fifth

The newly developed long-life filament delivers a service life more than five times longer than conventional filaments. By significantly reducing reanalysis and downtime caused by unexpected filament breakage, it supports stable and reliable operation.

Built for Evolving Labs

LabSolutions GCMS

Preparation

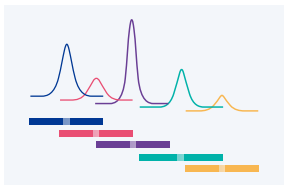
Smart MRM+

Smart Database

Measurement

Active Time Management

Automatic Analysis Method Creation Function



Smart MRM™+

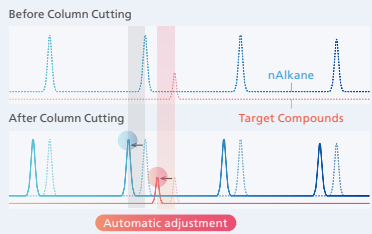
Smart MRM™+ automatically creates optimized analytical methods, enabling high-sensitivity, high-accuracy quantitative analysis—even for multicomponent analyses. In addition, event times and acquisition times for each compound can be easily adjusted within LabSolutions GCMS, ensuring efficient and flexible method optimization.

Databases Optimized for Each Application Field

The databases are pre-populated with the compounds required for each application, allowing users to start analysis immediately. With optimized analytical conditions, consistent, high-quality results can be obtained regardless of the operator's level of experience.

AART | Automatic Adjustment of Compound Retention Time

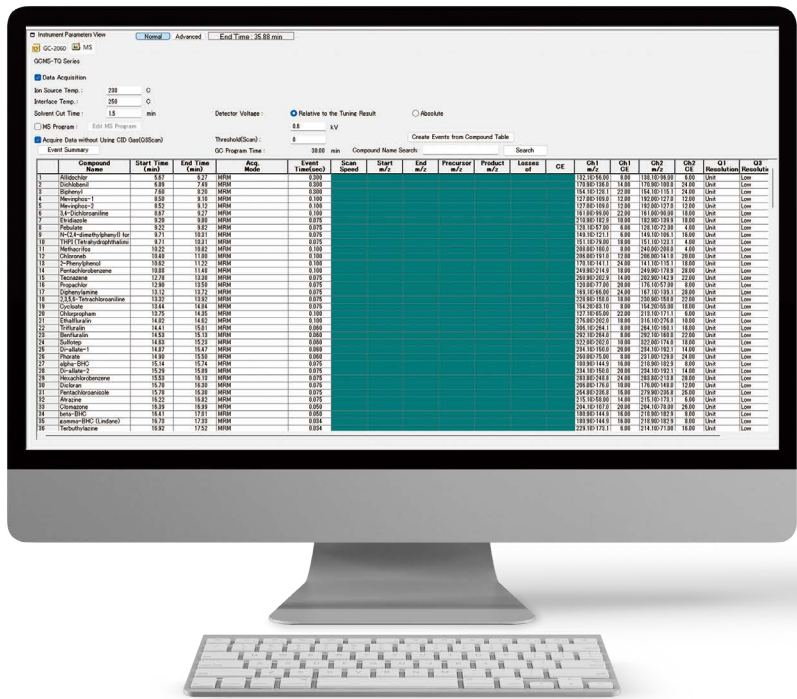
By simply analyzing an n-alkane solution, the retention times of target compounds are automatically corrected in a single process.



Time Management of the Measurement Workflow

LabSolutions Main (System Administrator)							
File View Process Window Help							
Instrument Type: ALL							
Instrument Name	Type	Analysis	Status	User	Queued Count	Estimated End Time	Instru...
GC-1060	GC	All Operations	Not Connected	-	-	-	-
GCMS-QP2050	GCMS	All Operations	Not Connected	-	0	-	-
GCMS-TQ8050RX	GCMS	All Operations	Running	System Ad...	1	5/8/2026 2:00:00 PM	-

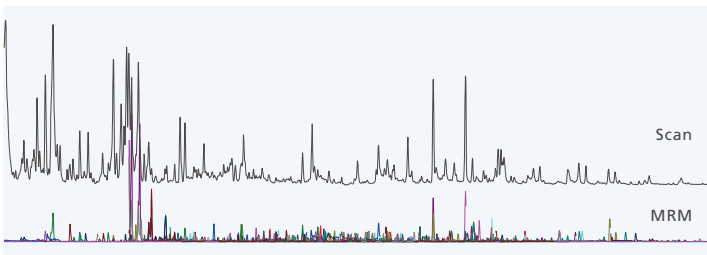
The operating status of each instrument in the laboratory and the estimated completion time of consecutive analyses can be monitored in real time. In addition, the remaining time until completion is displayed during instrument start-up and shutdown, which helps improve overall laboratory productivity and operational efficiency.



Flexible Method Development with Smart MRM+

Event #	Type	Compound Name	Event Time (s)	Time (2.64 min - 19.79 min)
1	MRM	Aldoxycarb deg.	0.3	
2	MRM	EPTC	0.3	
3	MRM	Acephate	0.15	
4	MRM	Etridiazole	0.15	
5	MRM	Isoprocarb	0.3	
6	MRM	XMC	0.3	
7	MRM	Fenobucarb	0.15	
8	MRM	Propachlor	0.15	
9	MRM	Benfluralin	0.15	
10	MRM	Cadusafos	0.15	
11	MRM	Propentamphos	0.15	
12	MRM	Pyrimethanil	0.15	
13	MRM	Prohydrojasmon-1	0.15	

Smart MRM+ allows flexible adjustment of the data acquisition time window. Widening the window helps prevent missed detections, even for compounds with retention time shifts or peak tailing. Additionally, event times can be easily modified for each compound, and compounds can be added or removed with ease.



Simultaneous Scan/MRM Analysis of Pesticides in Ginger (10 ppb)

Smart MRM+ enables the creation of simultaneous Scan/MRM methods. During quantitative MRM analysis, scan data can be used to assess matrix effects. The GCMS-TQ RX series also delivers performance comparable to a single quad GC-MS, providing high-quality scan data even during simultaneous Scan/MRM analysis.

Data Analysis

Peakintelligence™

Peakintelligence for GCMS



Equipped with an AI-based peak processing algorithm, Peakintelligence™ for GCMS significantly reduces the time required for peak processing while delivering results equivalent to those obtained by experienced analysts.

LabSolutions Insight™

Improved Throughput for Multi-Sample Data Analysis

LabSolutions Insight, a quantitative analysis support software for multi-sample analysis, significantly reduces the time required for multi-sample data analysis while LabSolutions Insight Explore GCMS supports qualitative analysis using deconvolution algorithms.

Maintenance

Maintenance Navigation

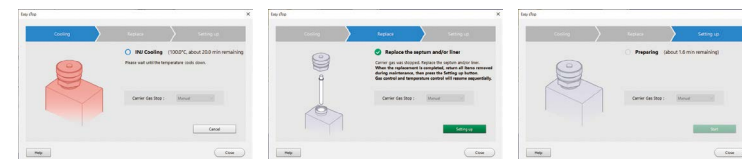


The Easy sTop function enables safe maintenance of the sample injection port without releasing the vacuum. It displays the remaining cooling time in real time, indicating when the septum or insert can be replaced. By clearly showing when maintenance can begin, overall maintenance time is minimized. In addition, rapid cooling of the injector with the MMI further reduces instrument downtime.

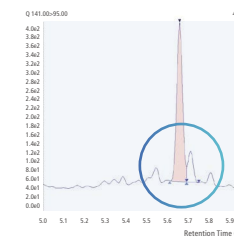


Easy sTop

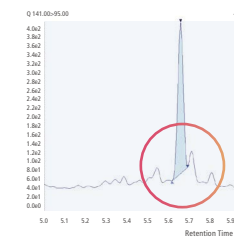
Active Time Management



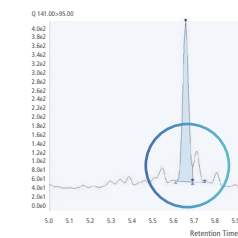
Improved Analysis Workflow Efficiency Through AI-Based Peak Processing



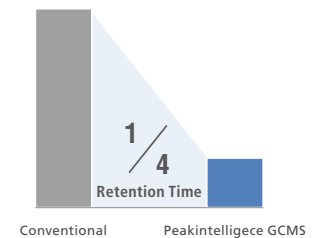
Peak integration results by experienced users



Conventional Shimadzu Algorithm
Baseline processing may vary depending on the operator

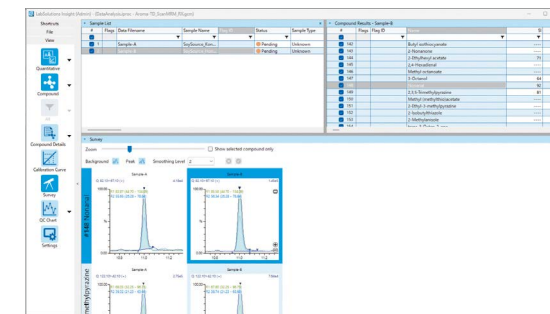


Peakintelligence for GCMS
Consistent peak processing results equivalent to those of an experienced analyst

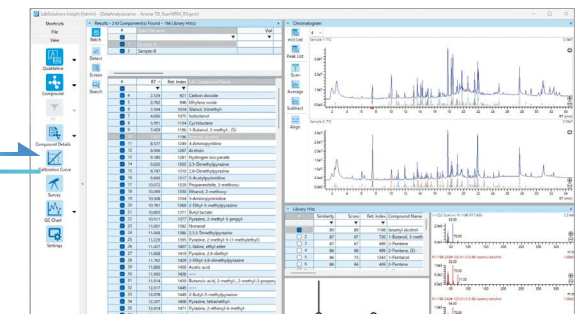


Peakintelligence™ for GCMS employs AI trained on peak processing performed by experienced analysts, enabling results comparable to expert-level analysis. In conventional workflows, incorrect automatic peak processing results must be manually corrected. In contrast, Peakintelligence for GCMS reduces the number of peaks requiring manual peak processing, reducing the time required for data analysis by approximately 75 %.

Quantitative and Qualitative Analysis on a Single Platform



Targeted Analysis Using MRM Data
(Easily and reliably check key components and sensitivity-critical compounds)



Non-Target Analysis of Scan Data with Insight Explore GCMS
(Reveal hidden peaks through deconvolution)

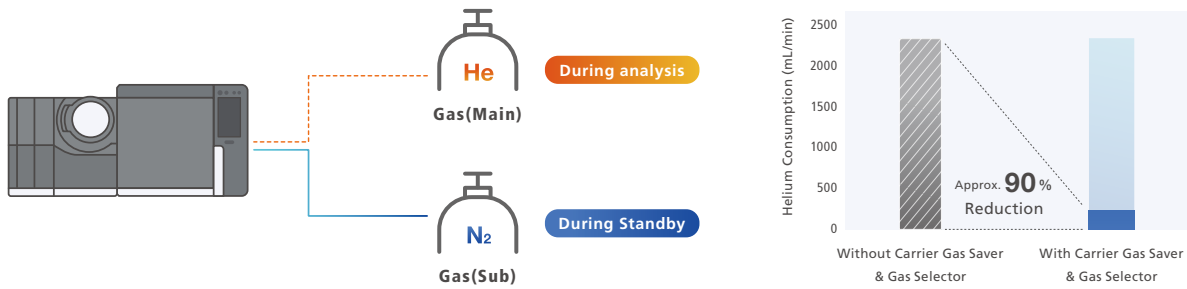
LabSolutions Insight enables targeted analysis using high-sensitivity MRM data and non-target analysis using scan data on a single platform when analyzing simultaneous Scan/MRM data.

Sustainable Laboratory Operation

Overcoming the Helium Gas Shortage

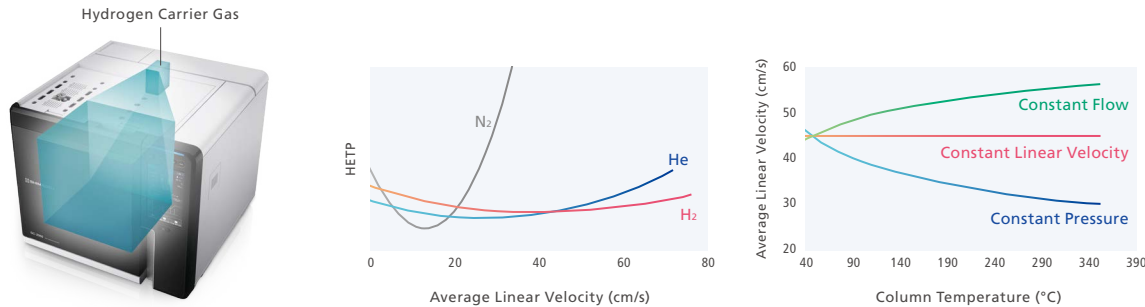
Minimizing Helium Gas Consumption

The standard carrier gas saver function reduces carrier gas consumption during analysis. In addition with the optional gas selector, the carrier gas can be switched from helium to nitrogen during standby periods, significantly reducing overall helium consumption.



Reliable Operation with Alternative Carrier Gases

Hydrogen or nitrogen, which are more cost-effective and readily available than helium, can be used as alternative carrier gases. With high-performance flow controller and a design that minimizes the influence of carrier gas properties, the GCMS-TQ RX series ensures stable measurements with hydrogen or nitrogen carrier gas without requiring changes to the system configuration.



Hydrogen Carrier Gas

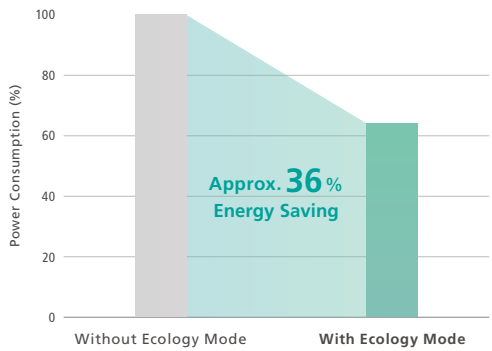
Hydrogen is an effective alternative carrier gas in terms of sensitivity and separation performance. By equipping the optional hydrogen sensor, the system automatically switches to a safe standby mode in the unlikely event of a leak, ensuring safe and reliable operation when using hydrogen as the carrier gas.

Nitrogen Carrier Gas

Even when employing nitrogen carrier gas, which has a relatively narrow optimal linear velocity range, the GCMS-TQ RX series, by using constant linear velocity mode, achieves separation performance equivalent to that obtained with helium.



An Environmentally Friendly Mass Spectrometer



Energy Saving

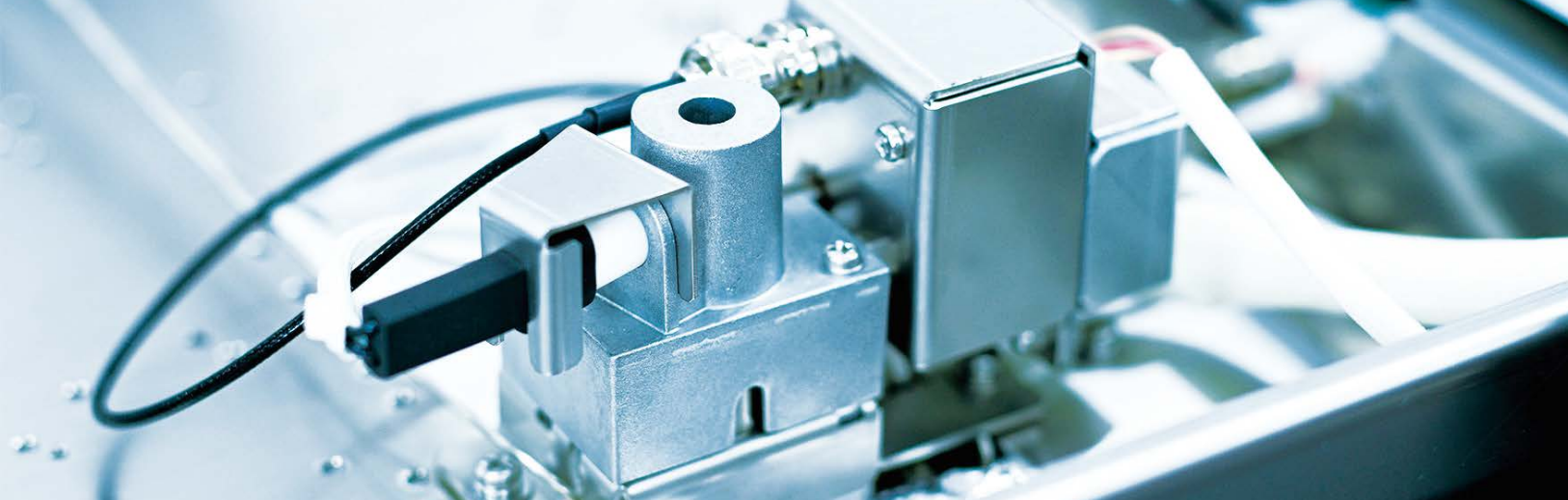


Certified as a
Shimadzu Eco Products Plus

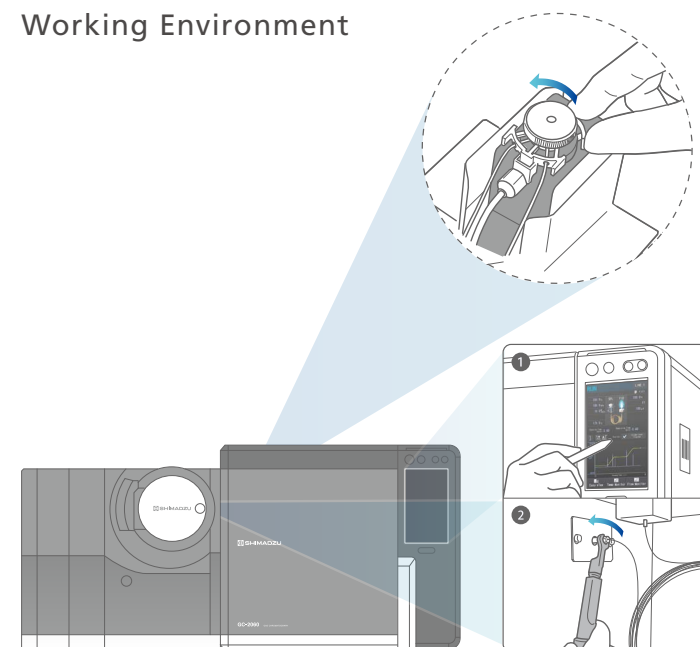
The GCMS-TQ RX series is equipped with an ecology mode that reduces power consumption and has been certified under Shimadzu's environmental recognition program, Eco Products Plus. In addition to lowering running costs during analysis, it helps reduce CO₂ emissions, contributing to the realization of a decarbonized society.

Reducing Environmentally Hazardous Waste

An oil-free type roughing vacuum pump can be used, eliminating the need for regular oil replacement. This significantly reduces oil consumption and contributes to a lower environmental impact.



Enabling a More Comfortable Working Environment



One-Touch GC Inlet Maintenance

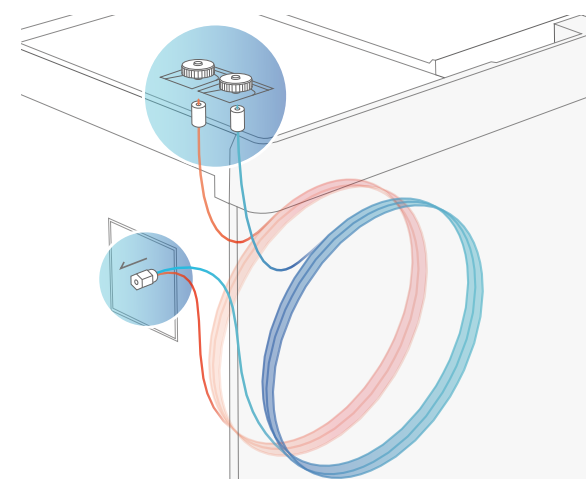
The system is equipped as standard with the ClickTek™ nut, which allows the GC inlet to be opened simply by turning the lever by hand—no tools required. This significantly reduces the workload associated with insert replacement and improves overall maintenance efficiency.

Easy Start-Up and Shutdown Via a Touch Panel

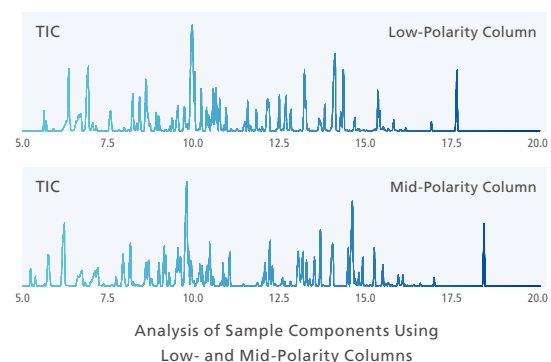
The vacuum system ON/OFF and Easy Stop* can be directly operated from the control panel on the GC. This eliminates the need for a computer, enabling smoother maintenance of the GC inlet, column, and ion source.

* Easy Stop is a function that enables septum and glass insert replacement at the GC inlet without stopping the vacuum system.

Twin Line MS System for Efficient Multi-Application Operation



By simultaneously connecting two different columns to the MS, application-specific data can be acquired without stopping the vacuum. Because no restrictor tubing is required, existing methods and retention times used with a single column can be applied without modification.

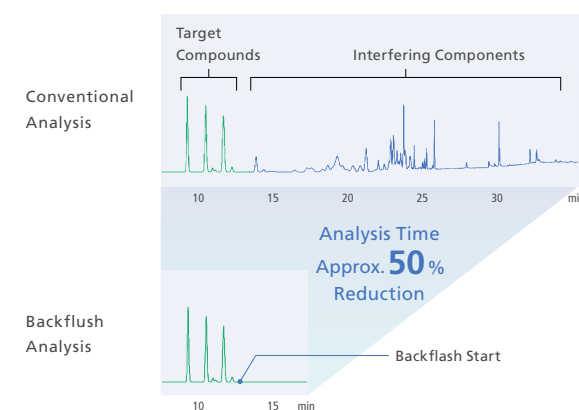


Advanced Flow Technology™ for Improved Analytical Productivity

Shorter Analysis Time

— Backflush System —

The backflush system reverses the carrier gas flow after the target compounds are detected, expelling un-eluted components remaining in the column from the injection inlet side. This shortens analysis time and improves overall improved analytical productivity.



Multiple Chromatograms in a Single Run

— Detector Splitting / Switching System —

Detector splitting divides the column outlet and distributes a single flow path simultaneously to multiple detectors. This allows multiple chromatograms to be obtained from a single analysis, enabling efficient data collection while reducing cost and measurement time, leading to higher productivity.

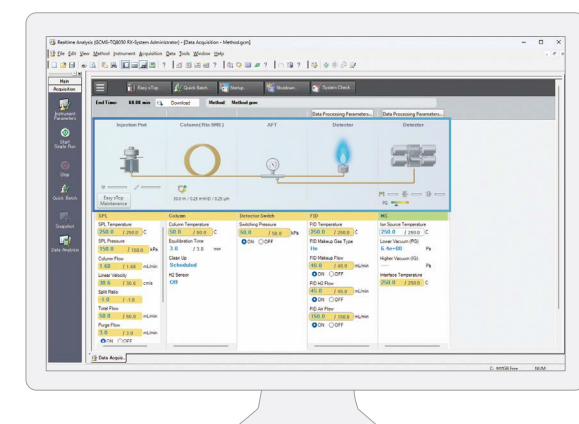
Multiple Chromatograms in a Single Run

— Heart-Cut System —

Heart-cutting is a separation technique that uses two different columns. Components that cannot be sufficiently separated on the first column are selectively transferred to a second column with different polarity for additional separation. Even with multiple heart-cut operations, peak retention times in downstream analysis remain unchanged, ensuring stable and reproducible separations.

Intuitive Software Interface

Even in systems combining multiple columns and detectors, the visually intuitive software interface enables easy operation from method creation through analysis.



An environmentally friendly design

AOC™-6000

Multifunctional Autosampler System

The AOC-6000 supports three sample injection methods: liquid, headspace, and solid phase micro extraction (SPME), allowing samples in a variety of forms to be analyzed. The system can automatically switch between injection methods, enabling different sample injection methods to be combined in a continuous operation.



HS-20 NX

Headspace Analysis System

The HS-20 NX headspace sampler provides robust support for the analysis of volatile components across applications ranging from research to quality control. The high-sensitivity electronic cooling trap enables quantitative and qualitative determination of trace components that cannot be detected with a conventional headspace sampler.



TD-30 Series

Thermal Desorption System

Thermal desorption systems heat samples in a sample tube, concentrate the desorbed gases, and then introduce them into a GC-MS system. The TD-30R offers outstanding processing capacity, accommodating up to 120 samples, along with excellent expandability, including retrapping functionality and automatic internal standard addition.



“Smart Database” Series Supporting Wide-Target Analysis

Numerous GC-MS databases are available to meet specific application requirements. By simply using the AART function to automatically correct retention times, analysis can be started quickly and easily.

Smart Pesticides Database™

The database covers 530 GC-MS-targeted pesticides used both domestically and internationally. It also includes information on compounds that can be used as internal standards, supporting analysis by the internal standard method.



Smart Metabolites Database™

The database includes 627 metabolites mainly found in food, blood, urine, and cells. In addition, information on 38 stable isotope-labeled compounds, It also includes enabling their use as internal standards.



Smart Aroma Database™

The database contains 511 key aroma compounds. It supports a wide range of aroma analyses, from odor screening using scan analysis to highly sensitive targeted analysis using SIM.



Smart Forensic Database™

The database includes 486 toxicologically relevant compounds, such as illicit drugs, psychotropic drugs, pharmaceuticals, pesticides, and other substances frequently involved in poisoning cases.



Smart Environmental Database™

The database includes information on 527 compounds, including stable isotope-labeled standards, covering polychlorinated biphenyls (PCBs), brominated flame retardants, dioxins, polycyclic aromatic hydrocarbons (PAHs), and organochlorine pesticides.



Quick-DB for Fast Standardless Screening

Quick-DB for Residual Pesticide Analysis

The database contains calibration information for pesticide surrogates used as internal standards. This enables accurate, simultaneous screening of 491 residual pesticides without the need for reference standards.

* Please note that surrogate reagents used with this product may not be available for sale in some countries.

Odor Analysis System

This analysis system registers key causative compounds and odor descriptor information identified from past odor incidents. Quantitative values can be calculated easily without using reference standards, and by comparing them with odor threshold values, the compounds responsible for odors can be identified.

Tested & Proven Consumables

High-quality consumables are essential to obtain accurate analytical results and maintain productivity. Our comprehensive range of consumables is designed to help your GC and GC-MS systems perform at their best, run after run.

Xtra Life Septum

Engineered for exceptional durability, the Xtra Life septum supports roughly 1000 consecutive injections — about ten times the typical lifetime — while maintaining consistent performance. In addition to enhancing throughput, it reduces maintenance requirements and lowers operating costs.



Comparison of C12 Area Reproducibility Between Xtra Life Septum and Premium Green Septum After 1000 Consecutive Injections

Deactivated Liner



Both the liner and wool receive Xtra Inert treatment that minimizes adsorption of target analytes. Each item is blister packed to block contamination until the moment of use, ensuring clean, reproducible injections and longer component life.

Xtra Inert Deactivated Liner (for MMI)

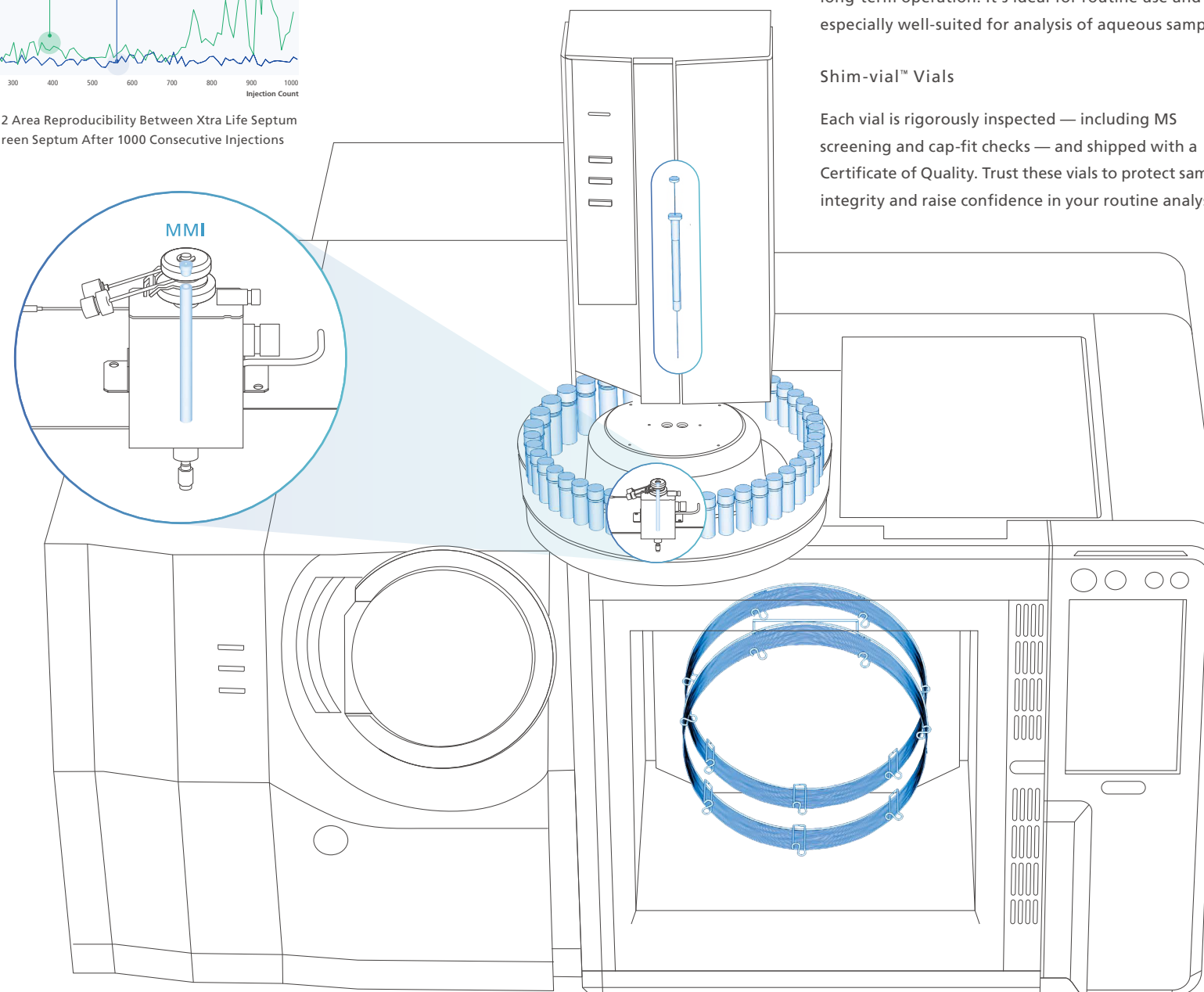


The Xtra Inert deactivation process minimizes adsorption and degradation of target compounds, ensuring best-in-class robustness and run-to-run reproducibility. With its 78.5 mm length and 1/4-inch outer diameter, this liner is compatible with many third-party GCs, allowing users to experience its superior performance across platforms.



Long-Life Filament

The long-life filament offers a lifetime more than five times longer than that of conventional filaments. This eliminates concerns about unexpected filament breakage, reducing the need for reanalysis and minimizing downtime.



Click-On Gas Filter

The Click-On Gas Filter removes oxygen, moisture, and hydrocarbons from utility gases. Filters can be replaced quickly and easily without the need for special tools. Indicator-equipped filters enable accurate determination of the optimal replacement timing.



AOC-30 / AOC-20 Consumables

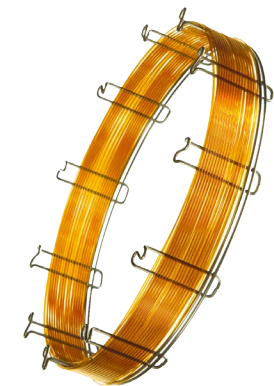
Xtra Life Microsyringe

This specially engineered titanium-alloy plunger provides superior flexibility that ensures reliable, long-term operation. It's ideal for routine use and especially well-suited for analysis of aqueous samples.



Shim-vial™ Vials

Each vial is rigorously inspected — including MS screening and cap-fit checks — and shipped with a Certificate of Quality. Trust these vials to protect sample integrity and raise confidence in your routine analyses.



Column

Shimadzu's extensive selection of GC capillary and packed columns lets you tailor separations for optimal resolution, sensitivity, and longevity across a wide range of applications. Simply select the appropriate stationary phase, length, inner diameter, and film thickness for your target analytes.

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