

Pesticides analysis

Powering productivity in your
**Pesticide
residues analysis**



Accelerate your path to multi-residue pesticide analysis

Global pesticide regulations are constantly evolving, and food safety labs are under ever-increasing pressure to detect and quantify a growing number of pesticides—with a fast turnaround time and at a competitive cost.

Whether your lab is built for research, routine testing, or commercial testing, we have solutions that help you stay on top of your pesticide residues analyses and quickly achieve a return on investment through increased sample throughput, maximum instrument uptime, and optimized use of analysts' valuable time.

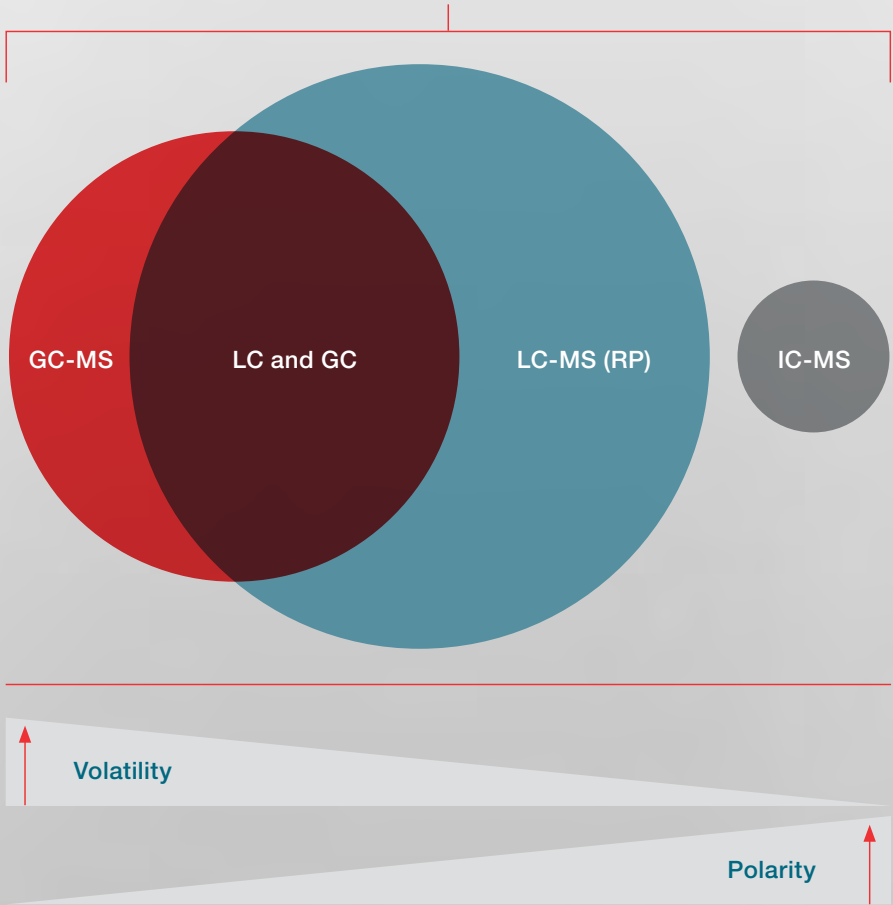
From sample extraction to data processing and reporting, the Thermo Scientific™ full workflow offerings for pesticide residues analysis deliver sensitive, robust, and reliable performance combined with ease of maintenance to improve instrument uptime and cost savings.



End-to-end solutions across the full range of pesticide classes

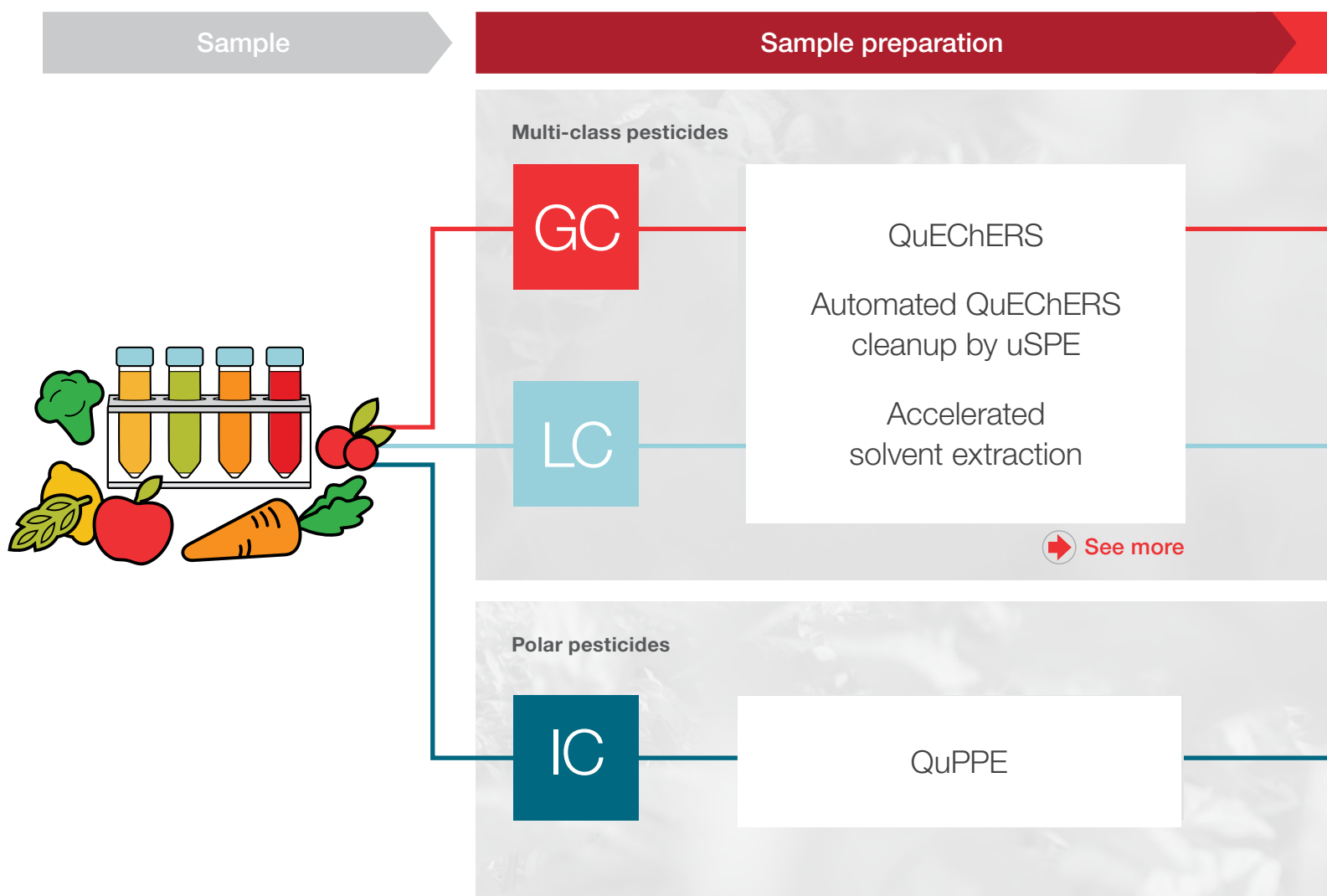
Active ingredients used in pesticides vary greatly in their volatility and polarity. To meet the analytical requirements of regulatory agencies, multiple separation and ionization strategies must be employed in order to achieve appropriate sensitivity and confidence for all potential compounds of interest. We have full workflow offerings across GC-, LC-, and IC-MS/MS, all controlled by a single software solution, helping you to simplify your operations and accelerate lab productivity.

Comprehensive monitoring of pesticide residues



Solutions and workflows

Whether you need pre-configured validated solutions for speed and convenience or the flexibility to build your own workflow, we can help.





Separation and detection

Connected software solutions

GC-MS/MS

High-Resolution Accurate-Mass (HRAM) GC-MS

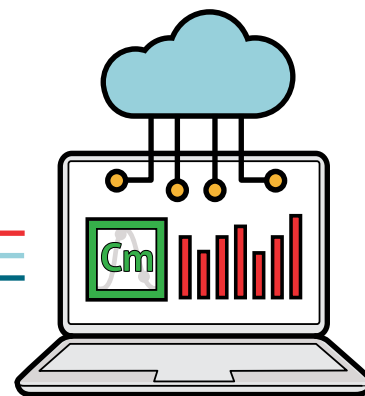
[See more](#)

LC-MS/MS Pesticide Explorer solutions
HRAM LC-MS Pesticide Explorer solutions
Tandem LC-MS workflows

[See more](#)

Anionic Pesticide Explorer solution
IC-MS/MS for cationic polar pesticides
HRAM IC-MS for ionic polar pesticides

[See more](#)



[See more](#)

Sample preparation

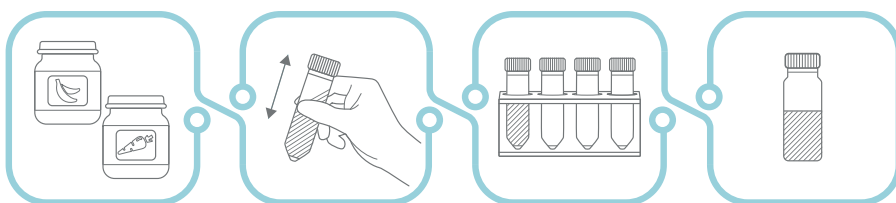
Streamline sample extraction and cleanup across varied matrices with manual and automated solutions

QuEChERS kits

Minimize the potential for error with pre-packaged, ready-weighed salts, solid-phase extraction (SPE) sorbents and buffers.

Our Thermo Scientific™ QuEChERS kits provide a quick, easy, rugged, and cost-effective sample preparation process for extraction of multiple pesticides from a range of different food types.

[▶ See more](#)



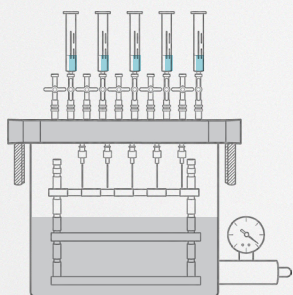
QuEChERS sample preparation method: proven, simple, and easily transferrable.



Solid-phase extraction consumables, filtration, and SureSTART sample handling

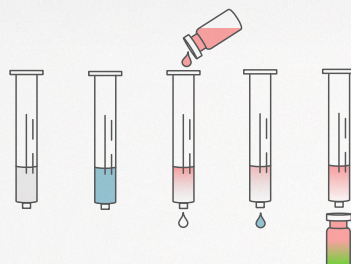
Save time, improve reproducibility, and extend the lifetime of your columns with our comprehensive range of sample preparation and handling products.

- Achieve high sensitivity, selectivity, and recovery with advanced SPE consumables



Increase consistency and reproducibility with vacuum and positive pressure manifolds

- Provide cleaner sample extracts with our high-quality syringes and syringe filters



Application-specific SPE cartridges

Explore these sources:

- [▶ Sample preparation solutions catalog](#)
- [▶ See the sample prep guide](#)

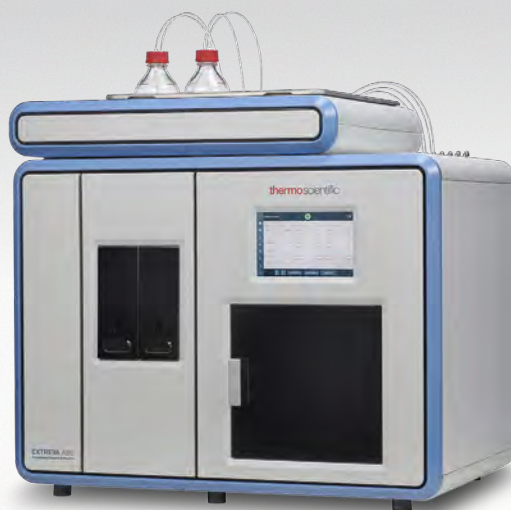
- Achieve robust and accurate results with the assured quality and performance offered by our Thermo Scientific™ SureSTART™ vials

- [▶ SureSTART collection catalog](#)
- [▶ SureSTART find my vial](#)

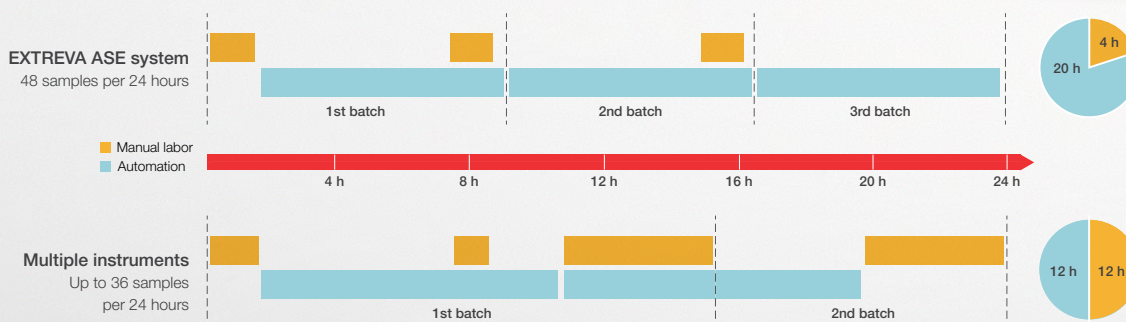


EXTREVA ASE Accelerated Solvent Extractor system

Accelerate your journey from sample to vial. The Thermo Scientific™ EXTREVA™ ASE™ Accelerated Solvent Extractor prepares more samples with three times less hands-on time, freeing staff to work on other priorities and increasing sample throughput. Combining two sample preparation instruments into one, the EXTREVA ASE system automatically extracts and concentrates samples in one seamless operation. Offering the full benefits of automation and an easy “load-and-go” start process.



 [See application note](#)

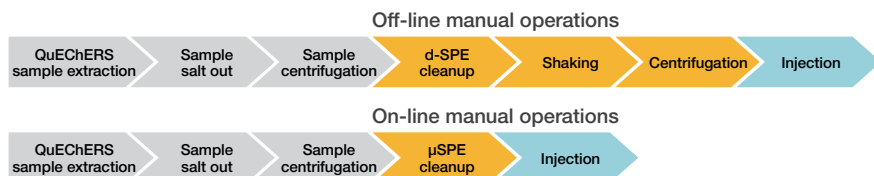


Automated clean-up of QuEChERS extracts with micro solid-phase extraction (μSPE) cartridges

Boost productivity with fast cycle times of under 10 min/sample and ability to overlap with the chromatographic run. Suitable for a wide variety of food matrices, the μSPE tool offers a unified method for LC- or GC-MS analysis of hundreds of pesticides.

 [See application note](#)

For use with TriPlus RSH and TriPlus RSH SMART autosamplers



Save time with on-line μSPE clean-up



Thermo Scientific™ micro Solid Phase Extraction (μSPE) cartridge and Thermo Scientific™ TriPlus™ RSH SMART autosampler

Separation and detection

GC

Attain unbeatable uptime with multi-class, multi-residue analyses by GC-MS/MS and GC-HRAM MS



“Due to the reduced downtime of the TSQ 9610 system, more samples can be evaluated, which generates a higher sample throughput per employee resulting in a higher analytical efficiency.”

—Rene Urbansky, Eurofins SOFIA GmbH

“The addition of the NeverVent technology to the AEI source drastically improved the instrument uptime. It is a major time and cost saving improvement.”

—Katie Banaszewski, NOW Foods

TSQ 9610 Triple Quadrupole GC-MS/MS system

Deliver ultimate performance while consistently producing trusted quantitative results

User-centric Thermo Scientific™ NeverVent™ technology, Thermo Scientific™ HeSaver-H2Safer™ technology for iConnect™ SSL injector, extended-life detector, and intelligent SmartStatus software eliminate unnecessary downtime to maximize your sample throughput and return on investment (ROI). New extended linear dynamic range combined with proven high sensitivity ensures you keep ahead of the toughest regulatory methods and business demands.

[➔ See application note](#)



Thermo Scientific™ TSQ™ 9610 GC-MS/MS system



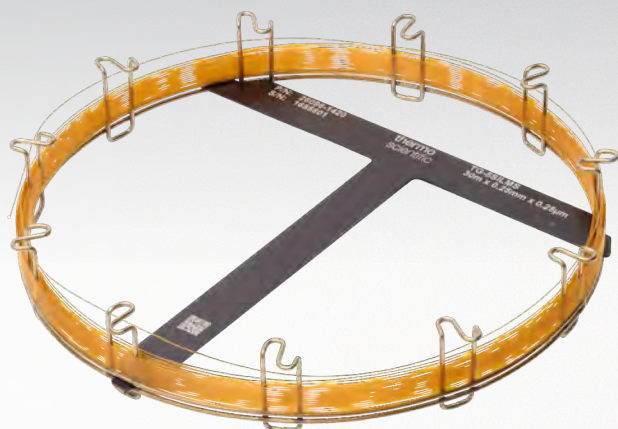
Orbitrap Exploris GC mass spectrometer

Simplify operations and deliver consistently accurate results using the Thermo Scientific™ Orbitrap™ Exploris™ GC mass spectrometer. This GC-MS system provides the flexibility to keep pace with ever-changing pesticides regulations and explore new opportunities through increased scope, method consolidation and retrospective analysis. Simple instrument set up and intelligent informatics enable users of all abilities to easily access data-rich information.

 [Explore application note](#)




Thermo Scientific™ Orbitrap Exploris™ GC mass spectrometer



GC columns and accessories

Achieve unrivaled GC performance with columns and accessories specifically designed and tested to meet the most stringent requirements for the analysis of pesticides.

 [Explore the catalog](#)





Achieve high-throughput multi-class, multi-residue analysis with LC-MS/MS, LC-HRAM MS, and Tandem LC-MS workflows



Vanquish HPLC and UHPLC systems—LC that takes your productivity to new heights

Designed with innovative technology and attention to fine detail, Thermo Scientific™ Vanquish™ HPLC and UHPLC systems are the most advanced LC instruments available. The Vanquish systems improve performance and repeatability with no trade-offs in quality, robustness, or ease-of-use.

- Better throughput, improved sample characterization, and faster return on investment
- Higher detector sensitivity and lower baseline noise
- Seamless integration with mass spectrometry for exceptional LC-MS performance
- Easy-to-use, control, and process data with Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS)

All Vanquish HPLC or UHPLC systems deliver:

- Unsurpassed retention time and peak area precision
- Dedicated tools for fast method development and validation with exceptional instrument robustness to maximize uptime

See brochure

“It’s one of the most promising techniques I’ve seen emerge over the past 5–10 years, and many of the laboratories we work with are asking us about implementing it for their analyses.”

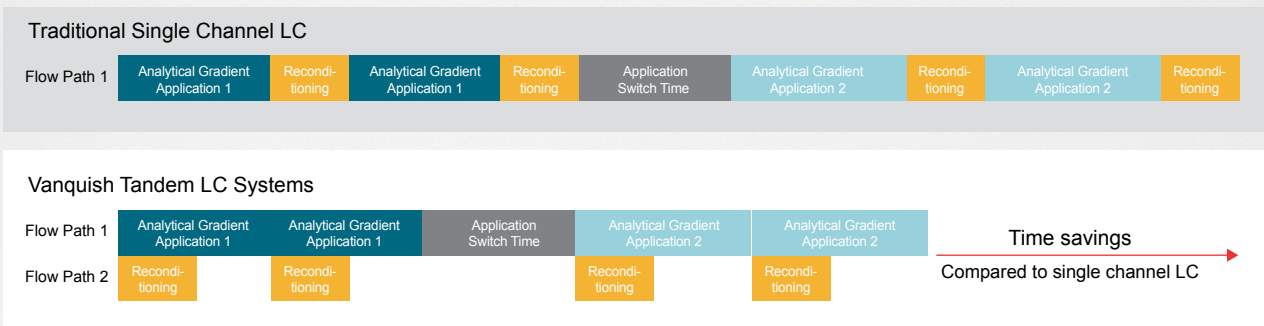
—Amadeo Fernández-Alba, Head of European Union Reference Laboratory for Pesticide Residues in Fruit and Vegetables and Professor, University of Almería

Vanquish Tandem LC systems

Increase productivity with Tandem LC separations

Thermo Scientific™ Vanquish™ Tandem LC systems utilize a second flow path for offline column reconditioning to increase throughput by an average of 40%, improving mass spectrometer utilization and reducing cost per sample. In addition, automatic method conversion means that you can run existing methods without any changes.

See flyer

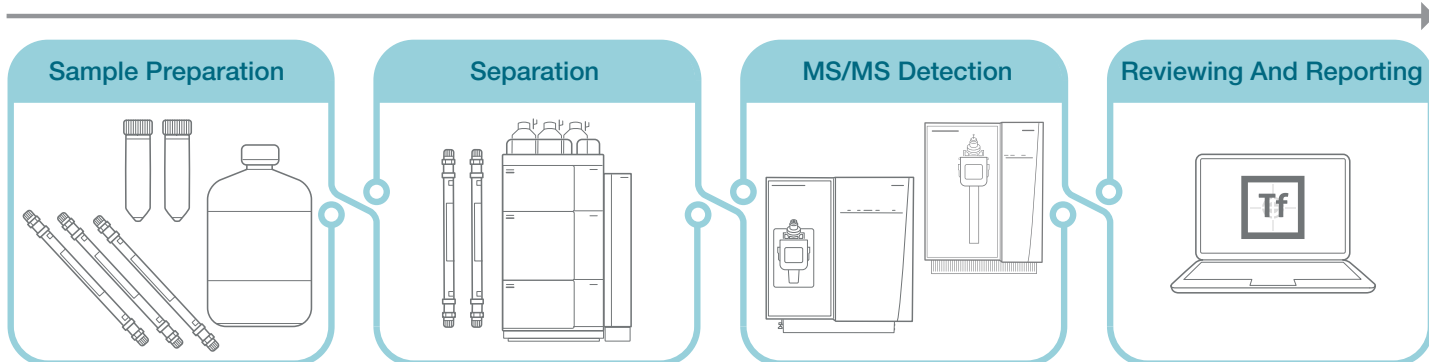


Pesticides Explorer solution

An out-of-the-box workflow solution, pre-tested and pre-validated to **quantitate over 400 pesticides in a single 15-minute analysis** with the triple quadrupole configuration or **quantitate/screen over 500 pesticides** with one of the Orbitrap configurations.

- The Vanquish Flex Binary UHPLC systems **increase flexibility without compromising quality of results.**
- Using the TSQ Quantis Plus triple-quadrupole mass spectrometer configuration, **users become productive quickly** with built-in automated compound optimization, and application-specific methods and reports.
- The Orbitrap Exploris 120 mass spectrometer produces high-resolution accurate-mass (HRAM) data that enables confident trace-level screening and quantitation, identification of unknowns, and retrospective analysis capabilities.
- Included Tracefinder software **reduces time from data acquisition to final report.**

Pesticide Explorer



[See application note](#)

LC columns and accessories

Simplify and improve your pesticide analysis results with Thermo Scientific HPLC columns. Available in particle sizes and column designs to meet all separation needs, they improve resolution, enhance sensitivity, and **deliver faster analysis** with consistent performance.

[Explore catalog](#)

[See HPLC column selection guide](#)



Execute fast analysis of both anionic and cationic polar pesticides with IC-MS



IC-MS enabled

Detection using mass spectrometry enhances your chromatographic analyses with improved selectivity and higher sensitivity. IC with suppressed conductivity is ideally suited for IC-MS applications because the suppressor converts the mobile phase into water using Reagent-Free Ion Chromatography (RFIC™) technology. The Dionex ICS-6000 HPIC system can be used for a wide variety of sample analyses due to its quaternary gradient capability and low-temperature thermal control. Additionally, all data analysis and reporting can be performed using the Chromeleon CDS software.

Adding MS to your workflow:

- Enables direct injection with no derivatization
- Eliminates sample preparation, saving time
- Precludes use of organic modifiers in separations
- Provides confirmatory, orthogonal information


 [See application note](#)

Dionex ICS-6000 HPIC system

The Thermo Scientific™ Dionex™ ICS-6000 HPIC™ system is top-of-the-line for polar pesticides analysis. This truly modular, highly configurable, high-performance system offers a suite of features to **get you from sample to results faster and keep your laboratory running seamlessly, including:**

- Single- and dual-channel system configuration options
- Finger-tight connections that minimize dead volume and make connections easier
- Automated tracking of the usage and performance of IC consumables
- Automated eluent preparation using Reagent-Free Ion Chromatography-Eluent Generation (RFIC-EG™) technology
- Tablet control of the IC system, to easily monitor sample runs
- An optional, always ready capillary IC configuration to perform 24/7 sample analysis
- IC columns featuring 4 μm particles to optimize chromatographic efficiency with shorter sample run times and/or improved resolution



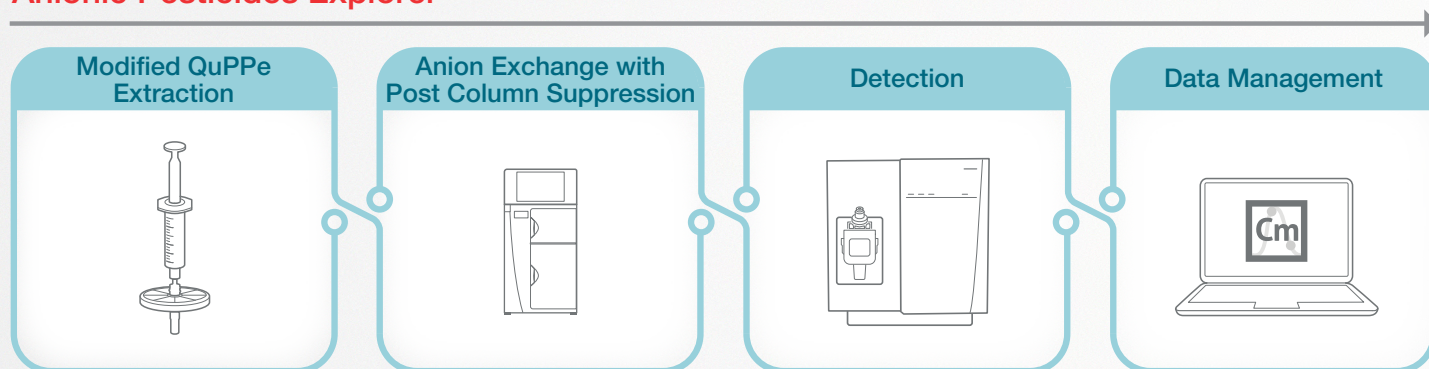
 [See brochure](#)


Anionic Pesticides Explorer solution

An all-in-one, integrated IC-MS/MS workflow that addresses the challenge of obtaining reliable quantitation of low concentrations of polar anionic pesticides, such as glyphosate, glufosinate, foseetyl and metabolites, **in a single analysis without the need for derivatization.**

- The Modified QuPPE sample preparation method, with cartridge SPE clean-up, **provides a time-saving approach** for the extraction and clean-up of polar anionic pesticide residues in food matrices.
- Extended validation undertaken on the Thermo Scientific™ Dionex™ Integriion™ HPIC™ system paired with a TSQ Altis Plus triple-quadrupole mass spectrometer ensures **easy setup for any lab wanting to quickly integrate anionic pesticide analyses.**
- Chromeleon CDS and TraceFinder productivity tools facilitate and support all steps from creating the analytical sequence to interactive monitoring of the analysis process, **giving users valuable time back to invest in more profitable activities.**
- With the appropriate hardware change of eluent, suppressor and columns, this solution can be converted to analyze cation polar pesticides. Or, simply setup a dual Thermo Scientific Dionex ICS-6000 system for both anionic and cationic polar pesticides.

Anionic Pesticides Explorer



 [See application note](#)

IC columns

Achieve excellent peak shape and selectivity for both anionic and cationic polar pesticides in diverse sample matrices, including foods, beverages and environmental waters, with columns designed for specific IC-MS applications.

- **High-capacity columns separate analytes in as little as 15 minutes**

 [See selection guide](#)



Connected software solutions



Control all analytical instrumentation and speed up data processing with Chromleon software

We understand that pesticide analysis can be time-consuming and labor intensive, often leading to lengthy and error-prone data review processes. See how you can lower training and maintenance efforts and drive productivity with Chromleon CDS. Designed to support pesticide analysis, providing all the tools needed to expedite data review, enable your lab to deliver more reliable results in a shorter time frame all whilst enabling quantification and identification of pesticide residues in accordance to SANTE guidelines.

Discover how you can benefit from...



Reduced training requirements

With a single software platform for GC/LC/IC- MS/MS and HRAM.



Ease of use

Simplify data processing with a customizable and streamlined user interface. Guide operators step-by-step with tailored view settings designed for pesticide analysis.



Improved productivity

Leverage the significant advancements in system architecture to achieve huge performance improvements. Efficiently handle hundreds or even thousands of components, XICs and injections, accelerating turnaround times.



Streamlined data review

Automatically flag unexpected results, filter data based on custom conditions to quickly access information you need and focus data review on relevant injections.



Increased confidence

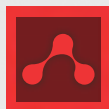
With dual sequence processing capabilities, merge data to provide orthogonal cross confirmation of identity, supporting compliance to SANTE analytical control criteria. Reduce number of re-injections and risk of misreporting.



Removing need to transfer data

Eliminate data transfer errors using the comprehensive, yet easy to customize Excel style reporting engine. Customize built-in reports and connect to LIMS software to provide batch management functionality.

Part of our comprehensive software solutions for data acquisition, processing, analysis and management



Ardia Platform

Further accelerate your pesticide analysis with the Thermo Scientific™ Ardia™ Platform. Connect data, applications and instruments to enable faster data processing and ease your lab management.



SampleManager LIMS software

Thermo Scientific™ SampleManager LIMS™ software helps drive repeatable and reliable testing whilst helping labs achieve compliance with even the strictest regulatory requirements.



Compound Discoverer software

Rapidly and confidently identify your unknowns with mass spectral library searching against both the online mzCloud spectral library, in-house Thermo Scientific mzVault spectral libraries, and numerous built-in annotation tools.



TraceFinder software

Thermo Scientific™ TraceFinder™ software is intelligently designed for screening unknown pesticide residues at trace levels.



Your all-in-one software solution for targeted pesticide workflows

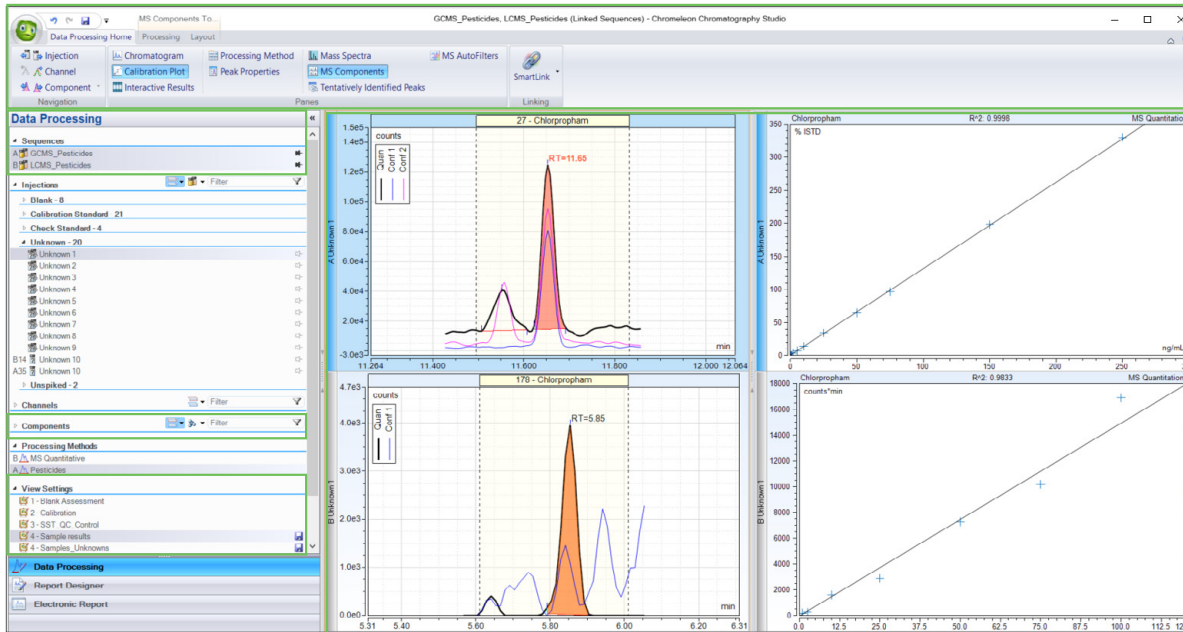
Link sequences

Sequences can be linked to allow orthogonal cross confirmation. Once linked, the user can easily pin which sequence(s) they want to view within the studio.



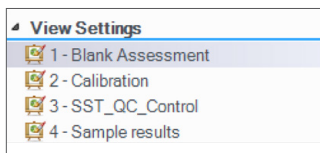
Customizable ribbon

For easy navigation, users can declutter the studio and customize the interface ensuring only the tools that are needed are seen in the contextual ribbons.



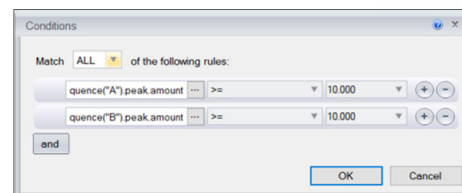
Tailored view settings

Easily follow standard operating procedures with configured view settings. Display required information for each step of your review process.



Filter results

Filter and flag data using custom conditions, (e.g., filter to only show components greater than Maximum Residual Levels (MRL) to enable focused review).



Dual sequence comparison

Studio panes automatically split when sequences are linked enabling side by side comparison and simultaneous processing and reporting.

 [Learn more about Chromeleon software](#)





Maximize instrument uptime with our superior service and support



As part of Thermo Fisher Scientific, Unity Lab Services offers a full range of service plans and service solutions that help deliver optimal performance and worry-free operation, support regulatory compliance, and reduce maintenance so that you can focus on your work.

You can count on us to be there with the support you need, when and where you need it.

Explore which service plan we recommend for your instrument by visiting thermofisher.com/recommendation

Visit Thermo Scientific™ AppsLab Library of Analytical Applications for online access to applications for GC, IC, LC, MS and more. thermofisher.com/AppsLab

Let us show you how our financial solutions can help you obtain the equipment you need easily and affordably. Learn more innovative equipment financing [here](#).

 Learn more at thermofisher.com/pesticides

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