



ACQUITY UPLC H-Class PLUS

PERFORMANCE THAT ADVANCES YOUR LAB

Waters
THE SCIENCE OF WHAT'S POSSIBLE.™

As an analytical laboratory, you solve problems and provide scientific information to other business units within your company. You require scientific tools that give you definitive results. You need to deploy analytical tools that support a diverse range of samples while fitting into your existing laboratory workflows. What you don't need is to compromise the quality of data or timeliness of the result.

The ACQUITY™ UPLC™ H-Class PLUS System is the next evolution of UltraPerformance instrumentation, delivering the flexibility and precision of quaternary or binary solvent blending with the advanced performance expected of UPLC separations: high resolution, sensitivity, and improved throughput. Whether your goal is to rapidly develop new methods or to routinely analyze large numbers of incoming samples, the ACQUITY UPLC H-Class PLUS System can help you decrease the time to result, while increasing the depth and quality of information received from your sample analysis.

SYSTEMS THAT MEET YOUR NEEDS FOR TODAY AND TOMORROW

- Improve laboratory productivity by transitioning methods to UPLC Technology
- Leverage advanced tools to simplify and streamline your method development workflow
- Improve the characterization of your most complex samples through enhanced resolution
- Increase the analytical value of your samples by leveraging optical and mass information
- Match the need of your laboratory through support of your existing HPLC, UHPLC, and UPLC methods

TRANSFORM STANDARD PROCEDURES INTO ULTIMATE PERFORMANCE

Low dispersion

True UPLC performance with band spread of less than 10 μ L for highest chromatographic resolution.

Versatile column management

Support for analytical LC column dimensions up to 300 mm with capacity to automatically select between as many as six analytical columns. Equipped with independently controlled temperature zones, active pre-heating, and eCord™ Intelligent Chip Technology for Waters™ columns.

Optional fraction collection

Temperature controlled and compatible with narrow UPLC peaks.

Gradient SmartStart

Easily adjust for system volume differences when transferring methods from an alternative LC system without alteration to the method table.

Solvent blending

Quaternary or binary solvent mixing. Delivers precise and accurate separations at pressures up to 15,000 psi. Optional solvent select valve adds access to additional solvents. Automated solvent compressibility, integrated solvent degassing, and programmable seal wash maximize flow accuracy, precision, and reliability.



Wide range of detection capabilities

UPLC-optimized detectors to match your application needs, including photodiode array, UV/Vis, fluorescence, refractive index, evaporative light scattering, and mass detection.

Flexible sample support

Accepts either vials or ANSI well plate formats. Extend capacity for high throughput and open access environments with the optional Sample Organizer.

Flow-through-needle injector

Volume range of 0.1 to 1000 μ L and ultra-low carryover performance compatible with your most sensitive LC-MS applications.

Auto-Blend Plus™ Technology

Program gradients directly in terms of pH, molarity, or organic composition to minimize manual mobile phase preparation, reduce human error, and accelerate method robustness testing for chromatographic methods. Available with the ACQUITY UPLC H-Class PLUS Quaternary System.

DISCOVERING THE BEST METHOD GETS YOU THE BEST RESULTS

In method development, whether you use a step-wise approach, systematic screening, or a Quality by Design (QbD) protocol, you encounter the same obstacles.

- What conditions should I investigate?
- How do I track my peaks as conditions change?
- How can I reduce the time it takes to develop a robust method?

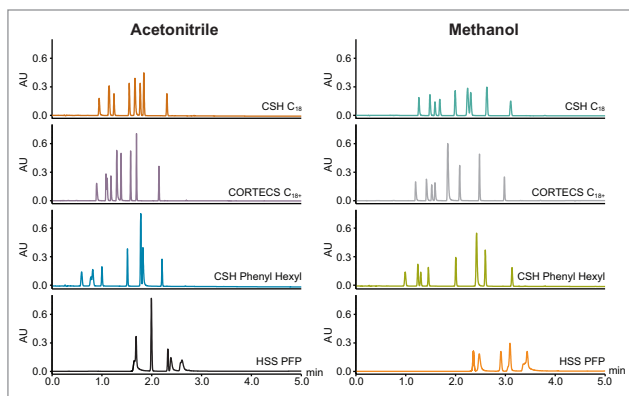
The ACQUITY UPLC H-Class PLUS Quaternary System simplifies and streamlines your method development workflow. With automated column selection from up to six, independently controlled column temperature zones, a number of selectivity choices can be easily, and quickly, screened. By incorporating the optional solvent select valve, mobile phase selectivity can be expanded from four to an additional six mobile phase lines to augment its standard quaternary solvent blending.

Combining these system capabilities with the Empower™ Sample Set Generator can help you to completely automate your method development experiment. And with the ACQUITY QDa™ Detector, method development can be significantly accelerated by utilizing mass information to track the movement of peaks when evaluating different method conditions.

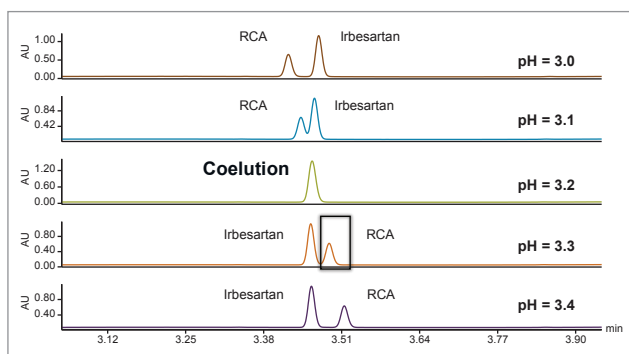
ONLINE ELUENT BLENDING - ANY BUFFER, ANY SOLVENT, ANY pH

Auto-Blend Plus Technology automatically blends your mobile phase to a specified pH and ionic strength or organic modifier percentage, for any set of analytical conditions you need. By leveraging this novel technology, the ACQUITY UPLC H-Class PLUS Quaternary System frees up analyst's time to perform more value-added activities by reducing the number of mobile phase buffers that need to be manually prepared.

Whether you are running biomolecules and require pH gradients for charge variant analysis, or you are performing small molecule method robustness testing and want to test small variations in pH, Auto-Blend Plus Software allows you to program an infinite set of conditions for any analytical method type.



In developing a method for metoclopramide and its related components, the ACQUITY UPLC H-Class PLUS Quaternary System was configured to automatically screen multiple column and eluent combinations to identify the separation conditions that provided the best chromatographic resolution.

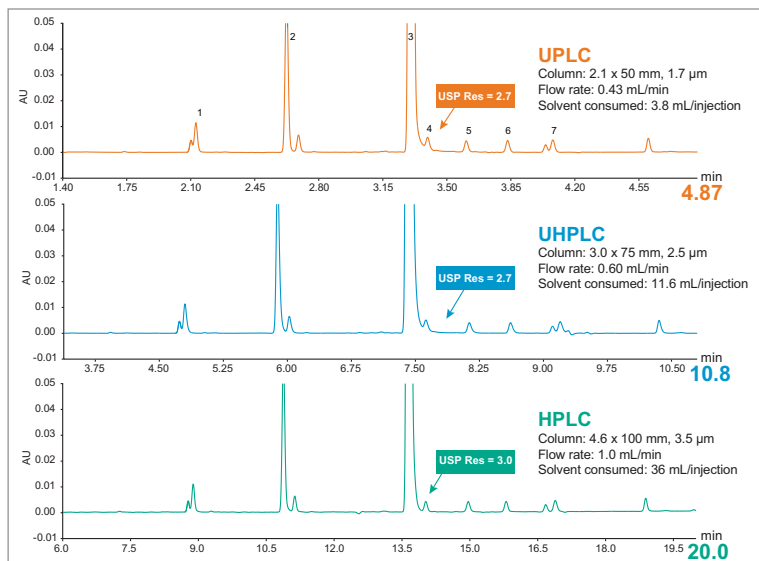


The USP assay for Irbesartan requires that the eluent be adjusted to pH 3.2, however, this results in a co-elution of the API and its related compound. By making automated, online adjustments to the pH in 0.1 increments using Auto-Blend Plus, a more robust set of pH conditions can be found.

TAKE YOUR METHODS TO THE NEXT PERFORMANCE LEVEL

Leverage the benefits of UPLC Technology to improve your existing HPLC methods. By scaling your methods to UPLC, your laboratory will benefit from the combination of increased resolution, sensitivity, and speed that comes with modern small particle chemistries.

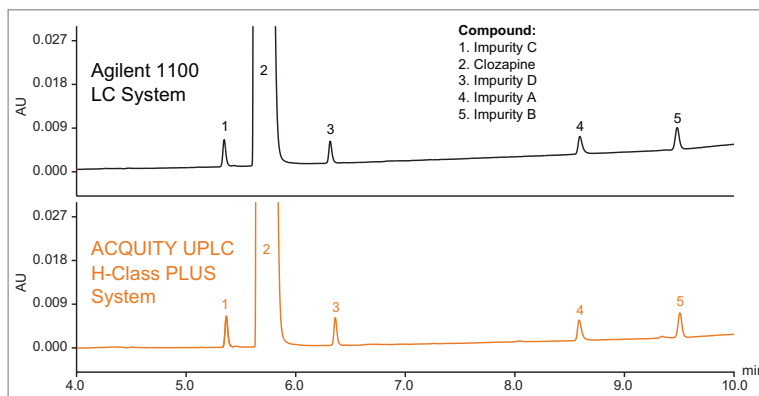
With novel method conversion tools such as the [Columns Calculator](#) and the [Column Coach](#), the process of upgrading your methods has never been easier.



The USP analysis of diclazuril and organic impurities was scaled from HPLC to UHPLC to UPLC. The UPLC method resulted in a 4x reduction in run time with a 10x reduction in solvent consumption resulting in improved sample throughput and reduced cost per analysis.

UPLC TOMORROW, BUT HPLC TODAY

Adopting a new analytical technology that improves laboratory efficiency is advantageous for supporting your new projects and products. But what about all of your existing HPLC analyses that support the products you have today? Designed to accommodate all of your LC method needs, the ACQUITY UPLC H-Class PLUS System is ideally suited to future-proof your laboratory, enabling the support of existing HPLC methods now, and provide significant productivity and cost benefit when utilized for UPLC methods.

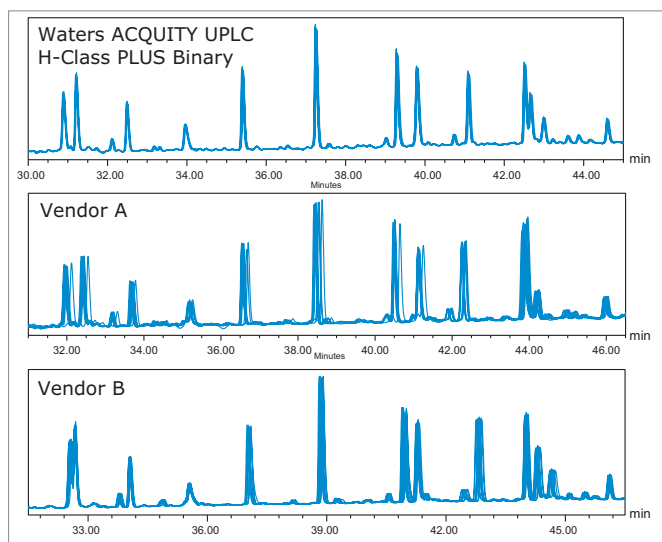


For the USP assay of clozapine, the system suitability solution was run on both an Agilent 1100 LC System and the ACQUITY UPLC H-Class PLUS System. For this gradient method, equivalent chromatographic results were achieved on both systems.

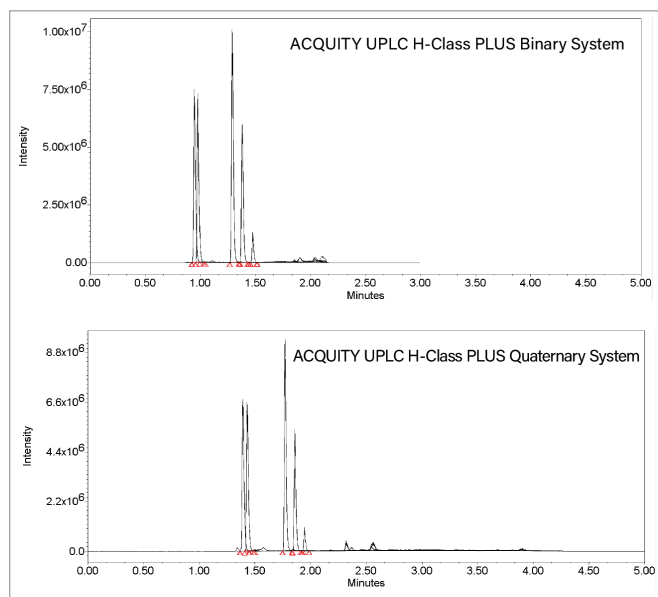
PRECISE BINARY SOLVENT BLENDING - HIGHEST GRADIENT PRECISION

Liquid chromatography methods often balance many factors that include: speed of analysis, sensitivity, selectivity, and robustness. Methods may also require the use of long, shallow gradients to ensure adequate resolution of all analytes in complex samples, such as peptide mapping digests.

The ACQUITY UPLC H-Class PLUS Binary System features a state-of-the-art high-pressure mixing binary solvent manager, which delivers the highest gradient precision needed to meet the retention time reproducibility requirements of your peptide mapping analyses.



Overlays of eight replicate injections on the ACQUITY UPLC H-Class PLUS Binary System (top), Vendor A binary UHPLC System (middle), and Vendor B binary UHPLC System (bottom).



Direct transfer without a gradient delay offers the opportunity for method improvement with the analysis time going from 5 minutes to 3 minutes representing a 40% reduction in runtime.

DELIVER HIGHER THROUGHPUT FOR ROUTINE ANALYSES

Fast and accurate analytical methods are essential to maximize your productivity. The ACQUITY UPLC H-Class PLUS Binary System combines the proven reliability and performance of the ACQUITY UPLC H-Class PLUS System with the precision and low system volume offered by our binary solvent manager, enabling you to improve the throughput of your methods.

MORE CAPABILITIES FOR YOUR LAB, MORE VALUE FOR YOUR ENTERPRISE

Empower 3 Software makes it easier than ever to run samples on the ACQUITY UPLC H-Class PLUS System and produce meaningful results without experiencing downtime for training, re-engineering workflow, or adding new software to support instruments or advanced chromatographic techniques.

Our versatile, easy-to-use software will increase your productivity, as well as:

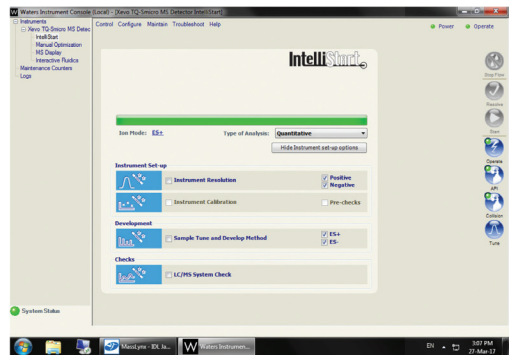
- Minimize training and transaction costs with intuitive and configurable user interfaces
- Eliminate the need for manual recordkeeping
- Support compliance and security requirements
- Improve your information management, storage, and data mining capabilities
- Refine your processes with method development and validation management tools

Empower 3 Software can grow to meet your laboratory's changing needs – it is easily scalable from a single workstation to an enterprise-wide network.

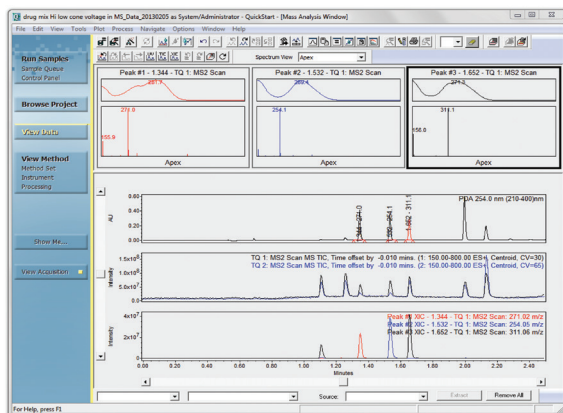
SAMPLE ANALYSIS IS ALL ABOUT QUESTIONS

MassLynx™ Software is mass spectrometry software that answers those questions, helping your entire laboratory further advance.

- Productivity increases and training costs are lowered with our easy-to-use software
- Run more samples faster with intelligent instrument control
- Enhance confidence in your results with dedicated Application Managers that quantitate, identify, and confirm
- Maintain compliance with integrated security features



MassLynx IntelliStart™ user interface integrates fluidics management with diagnostics software, allowing the system to automatically tune, calibrate, and conduct full UPLC-MS/MS performance checks. All you need to do is run your sample.



Empower 3 software can control MS instruments and acquire and process MS data. Spectral information from multiple detection modes can be viewed simultaneously in the Mass Analysis Window. This enables you to easily perform complex analyses with minimal training, increasing lab productivity.

www.waters.com/hclassplus

For your local sales office, please visit www.waters.com/contact

Waters

THE SCIENCE OF WHAT'S POSSIBLE.™

Waters, The Science of What's Possible, ACQUITY, UPLC, MassLynx, IntelliStart, Empower, Auto-Blend Plus, eCord, and QDa are trademarks of Waters Corporation. All other trademarks are the property of their respective owners.

©2019 Waters Corporation. Printed in the U.S.A. June 2019 720003268EN LM-SIG

Waters Corporation
34 Maple Street
Milford, MA 01757 U.S.A.
T: 1 508 478 2000
F: 1 508 872 1990
www.waters.com