Gold Standard for recovery and purity

Agilent 1200 Series Purification Systems

Our measure is your success.

products | applications | software | services
Maximize recovery and purity of your compounds

Regardless whether you have nanograms or grams of sample

Preparative HPLC has never been so easy and efficient

High recovery and purity are key issues for the isolation and purification of valuable pharmaceutical and biological compounds. Agilent offers preparative HPLC solutions for purification of nanogram to gram quantities of samples. Based on Agilent’s industry-leading 1200 Series LC platform, these systems can be tailored to your sample and detection requirements and are supported by a multitude of application examples. Fraction collection can be triggered by UV, mass or other detection signal, or even by a combination of these. The fraction preview function in Agilent ChemStation software intuitively visualizes changes of fraction trigger values in the chromatogram.

Modular design for maximum flexibility

The modularity of the Agilent 1200 Series Purification Systems offers you outstanding flexibility in terms of application and bench space. If your purification needs change, you can easily adapt or upgrade the system to meet the new requirements. A major advantage of the modular stack design is the ability to achieve shortest possible fluidic connections. Combined with optimized tubing diameters for different flow rates, this results in smallest delay volumes, minimal peak dispersion and lowest overlap between fractions.

- Optimum recovery and purity
- Scalable systems for nanogram to gram quantities
- Highest flexibility through modular design
- Patented fraction delay sensor
- Superior safety features through leak sensors and forced-fume extraction

- Tubing kits for rapid change when high or low flow needed
- Isocratic pumping is easily converted to gradient functionality
- UV-based detection can be upgraded to sophisticated mass-triggered fraction collection with active split
- Agilent’s evaporative light scattering detector as well as third-party detectors are easily integrated for detection and fraction triggering

A complete portfolio of LC solutions

Whatever your liquid chromatography needs are you will find your individual solution within the Agilent LC portfolio. Choose from solutions for routine standard LC applications or move up to high performance solutions for nanoflow, preparative, rapid resolution or ultra-fast LC.

To learn more, visit www.agilent.com/chem/1c
Highest recovery and purity
Agilent 1200 Series Purification Systems offer best-in-class performance in terms of recovery and purity.

Fraction delay sensor
The patented fraction delay sensor technology determines fraction delay volumes automatically and ensures that fractions are collected just-in-time without the need to collect extra volume to be on the safe side.

Signal processing
Time, peak and mass-based fraction collection – or any combination of these – are available and can be triggered by the detector of your choice. Intelligent real time data processing for instantaneous and precise fraction collection is guaranteed through the control area network (CAN).

Intuitive method development and upscaling
The fraction preview function in Agilent ChemStation provides an easy-to-use graphical tool to adapt fraction collection method parameters from a test run to a preparative separation.

Scalable systems for tailored solutions
Agilent offers three dedicated fraction collection systems for compound purification and isolation. This allows you to choose a system optimized for your needs. Multiple choices within a system are possible in terms of injectors, pumps, detectors, flow cells and fraction collectors.

Preparative scale purification
The 1200 Series Purification System Preparative Scale (PS) handles flow rates up to 100 mL/min for purification of up to several grams of compound.

Analytical scale purification
The 1200 Series Purification System Analytical Scale (AS) handles flow rates from 100 µL/min to 10 mL/min and is best suited for purification of micro- and milligram quantities of compounds. This system can be easily upgraded to a semi-preparative system for flow rates up to 100 mL/min.

Micro-fraction collection and spotting
The 1200 Series Micro-fraction Collection/Spotting System includes an Agilent 1200 Series Capillary or Nanoflow Pump for a flow rate range of 100 nL to 100 µL/min. This system is designed to collect nanogram to low microgram quantities or to spot droplets on MALDI targets from all major vendors.

Flexible fraction collection
The Agilent 1200 Series Fraction Collectors can be used with an extensive choice of containers including well plates, test tubes, Eppendorf tubes or HPLC vials. Special funnel trays are available for use with user-specific high capacity vessels. For high throughput applications, you can combine up to three fraction collectors in a single system, giving a total maximum capacity of 645 test tubes.
Robustness and ease of use
As the market and technology leader in HPLC instrumentation Agilent clearly differentiates itself in terms of product quality, robustness and ease of use. The patented fraction delay sensor technology guarantees peak collection just-in-time regardless of your instrument configuration. Temperature control of autosampler and fraction collector prevents deterioration of labile compounds – even during prolonged storage.

Confidence and safety
All Agilent 1200 Series Purification Systems include a suite of functions that provide you with the confidence and safety – for you, your equipment and the environment – that you need for automated unattended purification of your valuable samples. Leak detection and over/under pressure sensing prevent solvent spills and loss of sample. Forced fume extraction allows you to operate your system directly at your bench.

- Patented fraction delay sensor
- Leak sensing with system shutoff functionality
- Sample and fraction cooling
- Forced fume extraction for bench-top operation
- Early Maintenance Feedback (EMF)

Extend your system’s capacity using up to three fraction collectors in parallel.

Multiple collection modes are possible and the Agilent ChemStation fraction preview makes it easy to find the correct trigger parameters.
The Agilent 1200 Series Purification System PS can be deployed as either a *workhorse* to fulfill the automated day-to-day high throughput requirements of combinatorial and medicinal chemistry core facility labs or as a *method scale-up solution* for optimizing the resolution and recovery of your individual compound. This starts with an analytical run and transferring to preparative dimensions.

**Solvent delivery**
- Dual piston preparative pump – for backpressures up to 400 bar – is available as isocratic or gradient version
- Early Maintenance Feedback (EMF), pooling, recovery collection and leak detection

**Sample and fraction management**
- Choice of manual and automatic preparative injectors for fastest injection cycles combined with large injection volumes
- Preparative-scale fraction collector – with patented fraction delay sensor for optimum recovery – includes exchangeable trays for a large variety of collection containers
- High capacity extension enabling the usage of up to three fraction collectors in parallel

**Compound detection and fraction triggers**
- Superior UV detection with a choice of detection cells to cover a large dynamic range
- Simple integration of Agilent evaporative light scattering detector and third-party detectors through universal interface box (UIB)
- Mass-based fraction collection, including accurate active flow splitting
- User-defined combination of fraction triggers based on time, peak and/or mass

The Agilent 1200 Series Purification System PS is designed to handle high flow rates up to 100 mL/min for laboratory-scale purification. This system is the premium choice when milligrams to grams of starting material are available for purification. The flow rate range covered is ideal for columns with internal diameters from 9.4 to 50 mm. The system has a proven track record of robustness and reliability but at the same time it offers a high degree of individual flexibility to tailor the system configuration to meet the needs of your workflow and throughput.
The Agilent 1200 Series Purification System Analytical Scale (AS) is the most flexible and versatile fraction collection system in Agilent’s portfolio and can be easily extended for higher flow rates or converted to a low dispersion version. The standard configuration is designed for flow rates between 100 µL/min and 10 mL/min. It is the system of choice for compound purification in the milligram range and tailored to column internal diameters between 2.1 and 9.4 mm.

For higher flow rates up to 100 mL/min the Agilent 1200 Series Purification System AS can be easily converted for semi-preparative work by installing a shorter collection needle. This facilitates the use of larger capacity vessels up to 75 mm height as well as dedicated funnel trays that can be connected to user-defined containers of unlimited size.

If small quantities of material, low flow rates and minimum dispersion are of importance, simply exchanging tubing converts the analytical scale fraction collector to a low-dispersion device, guaranteeing excellent sample recoveries.

**Solvent delivery**
- Choice of isocratic, binary and quaternary pump
- Preparative pump for semiprep work
- Low dispersion kit

**Sample and fraction management**
- Automated sample tray recognition
- Trays for a large variety of test tubes, well plates, vials and Eppendorf tubes
- Up to 3 fraction collectors in parallel for high throughput
- Peltier sample/fraction cooling

**Compound detection and peak triggers**
- Intelligent user-defined combination of fraction triggers
- Compound detection and peak triggering by UV, ELS, RI, fluorescence and MS detection
Agilent 1200 Series Micro-fraction Collection/Spotting System
for accurate and reliable collection of small fractions

The Agilent 1200 Series Micro-fraction Collection/Spotting System for capillary and nanoflow rates (100 nL/min to 100 µL/min) is the most accurate and reliable instrument on the market. It is designed for collection of small fractions in 96 and 384 wellplate format, vials and Eppendorf tubes. In addition it is capable to spot nanoliter amounts reliably, precisely and fast onto MALDI targets of all major vendors.

The unique liquid contact control mode for droplet deposition in combination with proprietary tip design of the outlet capillary guarantees reproducible deposition of even the smallest droplets without bubble formation or cross contamination. This feature ensures that even at lowest flow rates combined with fast spotting rates the droplets are exactly positioned where they need to be.

If online matrix addition is used the withdrawal speed of the spotting capillary can be automatically calculated to ensure the precise user-defined droplet size. For offline multidimensional separations, MALDI spotting and proteomic applications the Agilent Micro-fraction Collection/Spotter System is the premium choice.

**Micro-fraction collection**
- Flow rate range from 100 nL/min to 100 µL/min (depending on pump)
- Back-pressure independent, best-in-class gradient reproducibility through electronic flow control
- Minimized delay volume and peak dispersion through optimized tubing sets
- High versatility through predefined well plate formats and Eppendorf tubes for up to 768 samples
- User-definable well plate choice for less common formats

**MALDI spotting**
- Support for all major MALDI targets
- Easy to perform MALDI spotting calibration
- Fast spotting/collection rate (minimum 3 s/spot)
- Online matrix addition kit
- Thermostatted version for degradable bio-samples and to prevent or enhance fast evaporation of small fractions
Agilent 1200 Series Modules for Purification

Solvent Preparation and Delivery

- **Vacuum Degasser**
  - Flow rate: Up to 10 mL/min
  - Internal Volume: 12 mL per channel

- **Micro Degasser**
  - Flow rate: Up to 5 mL/min
  - Internal Volume: 1 mL per channel

- **Isocratic Pump**
  - Flow range: 0.001–10 mL/min*
  - for isocratic analysis

- **Quaternary Pump**
  - Flow range: 0.001–10 mL/min*,
  - for gradient analysis
  - (requires degasser)

- **Binary Pump**
  - Flow range: 0.001–5 mL/min*
  - for fast gradient analysis

- **Preparative Pump**
  - Flow range: 0.001–100 mL/min
  - (extendable to binary gradient)
  - for isolation and purification
  - (column ID: 4.6–50 mm)

- **Capillary Pump**
  - Flow range: 0.01–1 µL/min
  - (extendable up to 2.5 mL/min)*
  - for gradient analysis
  - (column ID: 0.18–1 mm)

- **Nanoflow Pump**
  - Flow range: 0.01–1 µL/min
  - (extendable up to 2.5 mL/min)*
  - for gradient analysis
  - (column ID: 0.075–0.1 mm)

- **Capillary Pump**
  - Flow range: 0.01–100 µL/min
  - (extendable up to 2.5 mL/min)*
  - for gradient analysis
  - (column ID: 0.18–1 mm)

* (settable flow range)

Injection Systems

- **Standard Autosampler**
  - Injection range: 0.1 µL–100 µL
  - (extendable up to 5000 µL)
  - Sample container: Vials

- **Preparative Autosampler**
  - Injection range: 0.1–5000 µL
  - Sample container: Vials

- **Dual Loop Autosampler PS**
  - Injection range: up to 10 mL
  - Sample container: Vials and well-plates

- **Micro Well-Plate Autosampler**
  - Injection range: 0.01–8 µL
  - (extendable up to 40 µL)
  - Sample container: Vials and well-plates

* (Also available with thermostat with temperature range 4 – 40°C)
### Detectors

<table>
<thead>
<tr>
<th>Detector Type</th>
<th>Flow Rate</th>
<th>Additional Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable Wavelength Detector</td>
<td>up to 100 µL/min</td>
<td>for programmable single wavelength analysis, 1 signal, 20 Hz data sampling rate</td>
</tr>
<tr>
<td>Multiple Wavelength Detector</td>
<td>up to 10 mL/min</td>
<td>for multi-wavelength analysis, 8 signals, 20 Hz data sampling rate</td>
</tr>
<tr>
<td>Diode Array Detector</td>
<td>up to 100 mL/min</td>
<td>for multi-wavelength and spectral analysis, 8 signals, 20 Hz data sampling rate</td>
</tr>
<tr>
<td>Evaporative Light Scattering Detector</td>
<td>5 µL/min – 5 mL/min</td>
<td>Flow rate: 5 µL/min – 5 mL/min For peak widths of 1 second or larger</td>
</tr>
<tr>
<td>6000 Series LC/MS Systems</td>
<td></td>
<td>6100 Series Quadrupole LC/MS Systems</td>
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### Valves

<table>
<thead>
<tr>
<th>Valve Type</th>
<th>Flow Rate</th>
<th>Additional Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-position/6-port valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-position/10-port valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-position/6-port micro valve</td>
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<tr>
<td>2-position/10-port micro valve</td>
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<tr>
<td>6-position selection valve</td>
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<tr>
<td>12-position/13-port valve</td>
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### Fraction Collectors

<table>
<thead>
<tr>
<th>Collector Type</th>
<th>Flow Rate</th>
<th>Additional Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro-Fraction Collector/Spotter</td>
<td>up to 100 µL/min</td>
<td></td>
</tr>
<tr>
<td>Fraction Collector (AS)*</td>
<td>up to 10 mL/min</td>
<td></td>
</tr>
<tr>
<td>Fraction Collector (PS)*</td>
<td>up to 100 mL/min</td>
<td></td>
</tr>
</tbody>
</table>

*(Also available with thermostat with temperature range 4 – 40°C)*
Flexible software solutions address different user needs
Tailor the software to meet your purification requirements

Modular software for tailored control
Agilent’s concept of a modular instrument structure is not only realized for the hardware but also in the chromatographic data systems. Agilent ChemStation software offers standard functionality and includes all major capabilities for instrument control and data analysis. For a higher level of comfort the Agilent Purification software provides further tools dedicated to the specific needs of purification and fraction collection. Agilent Easy Access software facilitates complete system management in a multi-user environment and is ideal for occasional or novice users.

STANDARD
- Standard functionality for easy system usage

ADVANCED
- Easy management of large numbers of samples, flexible workflow integration

WALK-UP
- System management for secure access. Ideal for novice users

Agilent ChemStation
- Full system control for standard purification functionality
- Peak-trigger options
- Fraction preview tool
- Graphical fraction data analysis for data review
- ChemStation Security Pack supporting 21 CFR Part 11 compliance

Agilent Purification Software
- Color-coded user interface for study setup and fraction tracking
- Sophisticated data export/import
- Extended result reporting
- Fast data review

Agilent Easy Access Software
- Administrator tools for access, tracking and project management
- Easy sample submission and status review
- E-mail notification
- Rapid identity confirmation (mass-based)
Separation columns complete the picture
A single-vendor solution for all your purification needs

Agilent offers a complete single-vendor solution for your purification workflow. The extreme range of flow rates delivered by the Agilent pumps — from nanoflow to preparative — facilitates optimum separation of your analyte mix for maximum recovery and resolution.

Preparative scale separation columns
Agilent’s range of columns for preparative HPLC — with internal diameters from 4.6 to 50 mm, covers the complete flow rate range of the Agilent 1200 Series Purification System (PS). The Agilent Prep C18 and normal phase columns enable highest sample loading and exhibit proven stability up to pH 10 as well as extended column lifetime. The highly acclaimed ZORBAX columns — ZORBAX Prep HT for reversed phase separation and normal phase chromatography — facilitate high sample throughput and are ideal for samples that are complex or difficult to separate.

Capillary and nano columns for micro-fraction collection and MALDI spotting
Extremes in sensitivity with limited samples volumes require small column IDs. For your proteomic applications either for one-dimensional or for two-dimensional separation workflows including offline micro-fraction collection, Agilent has a wide variety of column choices. Column IDs start as low as 0.075 µm and 0.1 µm, which are perfectly suited for MALDI spotting applications. Micro-fraction collection is usually performed at capillary flow rates with column IDs of 0.3, 0.5, or 0.8 µm. Agilent offers a broad choice of ZORBAX reversed phase columns for different applications with different bonding chemistries, pore and particle sizes.

High purity, high recovery and high throughput can be easily achieved with Agilent ZORBAX PrepHT columns, which are available in a variety of bonded phases — Eclipse XDB, StableBond, Bonus-RP, and Extend-C18 — for optimized resolution and loadability under any conditions.
Agilent Value Promise —
10 years of guaranteed value

In addition to continually evolving products, we offer something else unique to the industry — our 10-year value guarantee. The Agilent Value Promise guarantees you at least 10 years of instrument use from your date of purchase, or we will credit you with the residual value of that system toward an upgraded model. Not only does Agilent ensure a safe purchase now, we help ensure your investment is as valuable to you in the long run.

Agilent Service Guarantee

Should your Agilent instrument require service while covered by an Agilent service agreement, we guarantee repair or we will replace your instrument for free. No other manufacturer or service provider offers this level of commitment to keeping your laboratory running at maximum productivity.