

# Agilent 1260 Infinity GPC/SEC System

Precise and reproducible polymer characterization

## Data Sheet

### Introduction

Gel permeation chromatography (GPC), also referred to as size exclusion chromatography (SEC), is the technique of choice to characterize polymers. Molecular weight averages and molecular weight distributions are calculated based on the polymer elution behavior. The Agilent 1260 Infinity GPC/SEC System offers excellent retention time precision for reproducible, precise molecular weights.

The 1260 Infinity GPC/SEC System is designed for cost-effective, routine polymer characterization with refractive index, UV-visible or evaporative light scattering detectors. It is based on the reliable Agilent 1200 Infinity Series LC modules. Instrument control, data acquisition and analysis can be performed with the easy-to-use Agilent GPC/SEC software.



**Agilent Technologies**

## New level of molecular weight data precision

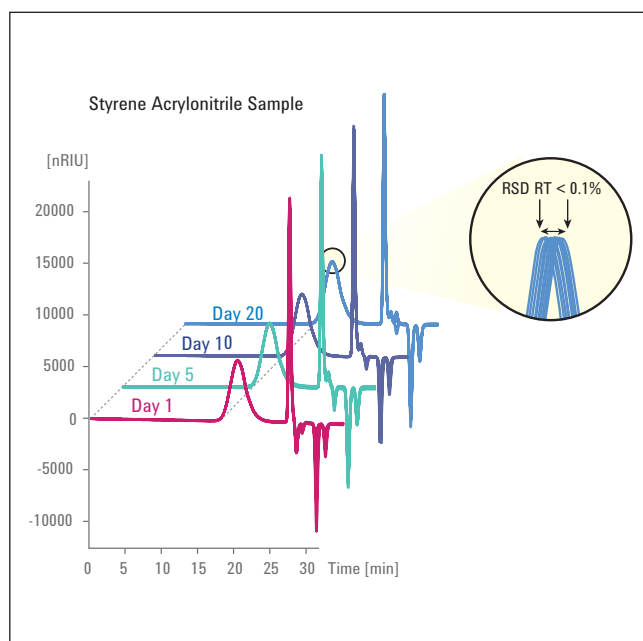
The excellent flow precision of the Agilent 1260 Infinity Series pump and the superior column thermostat stability from 10 degrees below ambient to 80 °C ensure retention time precision below 0.1% RSD. Moreover, intraday and interday repeatability is outstanding.

## Extreme robustness

For any modern laboratory, a dependable and reliable system is essential to ensure high sample throughput and lab efficiency. The Agilent 1260 Infinity LC has a proven robust design for long instrument uptime. Reduced operating and maintenance costs mean a low total cost of ownership. And because it's from Agilent, you get everything you expect from a chromatography leader with over 35 years of innovative contributions to GPC/SEC technology.

## Excellent performance

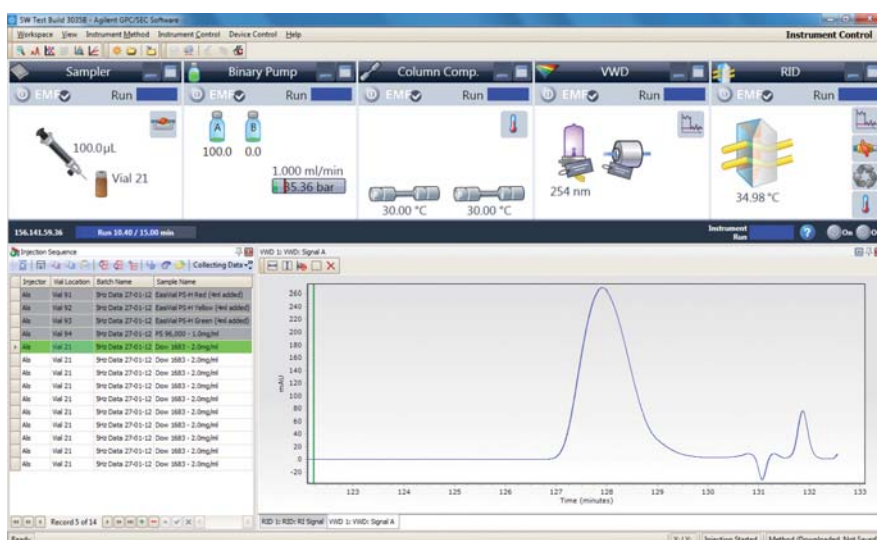
The Agilent 1260 Infinity LC modules provide fast and sensitive detection of your polymer analyte. The Agilent 1260 Infinity Refractive Index Detector (RID) is the perfect partner for GPC/SEC. It combines exceptional baseline stability with a built-in solvent recycle valve for reduced waste. The Agilent 1260 Infinity Standard Autosampler provides reliable injections from 0.1 µL to 100 µL. The system is easily adaptable to increase injection volumes up to 1500 µL for semi-preparative GPC/SEC.



This overlay of 10 consecutive runs per day over 20 days shows the remarkable daily and day-to-day precision of retention times. The average RSD for retention times is 0.035%.

## Agilent GPC/SEC software

The 1260 Infinity GPC/SEC System is fully controlled with the new Agilent GPC/SEC software – a dedicated solution software package, capable of controlling all of the 1200 Infinity Series LC modules – with a simple and intuitive interface.

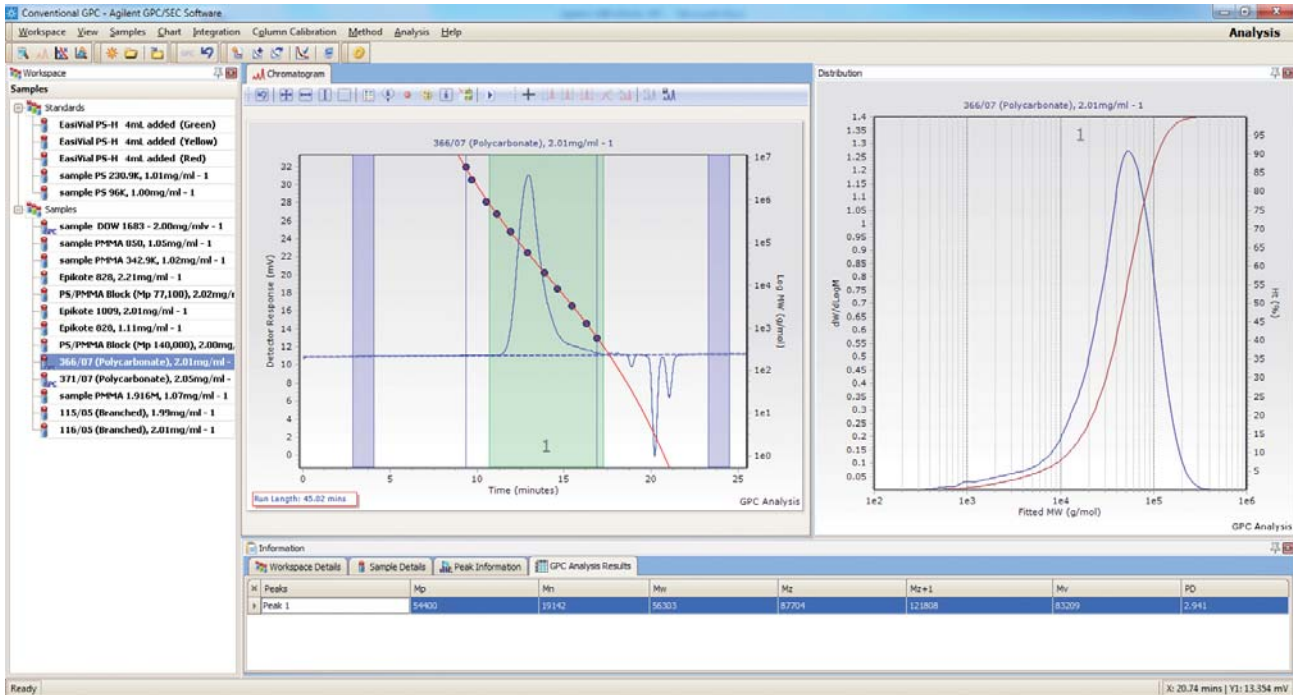


The Agilent GPC/SEC software has exactly the same look-and-feel as the Agilent OpenLAB CDS ChemStation Edition software for HPLC. That means it's easy for you to move from one system to another when you deploy both techniques in your laboratory.

## Versatile and flexible

The graphical interface can be customized to suit any user, from a simple uncluttered display to a complete, accessible view of all of the available information. This makes the software easy to use for both beginners as well as experts.

With quick system set up and control, easy data collection and intuitive analysis, Agilent's GPC/SEC software simplifies and facilitates the workflow.



Raw data chromatogram and molecular weight distribution from analysis of a polycarbonate sample .

## System details

A complete Agilent 1260 Infinity GPC/SEC System includes:

- Agilent 1260 Infinity Degasser reduces baseline noise due to high degassing capacity.
- Agilent 1260 Infinity Isocratic Pump for flow precision < 0.1% RSD
- Agilent 1260 Infinity Autosampler with single valve design
- Agilent 1260 Infinity Thermostatted Column Compartment for temperatures from 10 degrees below ambient up to 80 °C and temperature precision of ± 0.15 °C; for up to three full-length, 30 cm columns.
- Agilent 1260 Infinity Refractive Index Detector with an automatic recycle valve
- Agilent GPC/SEC software for fast and easy control and analysis
- A variety of GPC/SEC columns for organic and aqueous eluents are available, with a complementary range of standards
- A variety of 1200 Infinity detectors available to suit application
- Reference primers and application compendiums
- Upgradable to advanced GPC using the Agilent 1260 Infinity GPC/SEC Multi-Detector Suite

## Specifications

| Agilent 1260 Infinity Standard Degasser                |  |
|--|--|
| Maximum flow rate                                      | 10 mL/min per channel  |
| Number of channels                                     | 4  |
| Internal volume  | 12 mL/channel  |
| Agilent 1260 Infinity Isocratic Pump                   |  |
| Flow precision   | ≤ 0.07 % RSD or ≤ 0.02 min SD, whatever is greater; based on retention time at constant room temperature   |
| Flow accuracy  | ± 1 % or 10 µL/min whatever is greater, pumping degassed H <sub>2</sub> O at 10 MPa (100 bar)  |
| Pressure operating range                               | Operating range up to 60 MPa (600 bar, 8700 psi) up to 5 mL/min  |
|  | Operating range up to 20 MPa (200 bar, 2950 psi) up to 10 mL/min   |
| Pressure pulsation                                     | < 2 % amplitude (typically < 1.3 %) or < 0.3 MPa (3 bar), whatever is greater, at 1 mL/min isopropanol, at all pressures > 1 MPa (10 bar, 147 psi) |
| Agilent 1260 Infinity Standard Autosampler             |  |
| Valid with standard 100 µL metering head installed     |  |
| Injection range  | 0.1 - 100 µL in 0.1-µL increments<br>Up to 1500 µL with multiple draw (hardware modification required)   |
| Precision  | < 0.25 % RSD from 5 - 100 µL,<br>< 1 % from 1 - 5 µL, variable volume  |
| Sample viscosity range                                 | 0.2 - 5 cp   |
| Sample capacity  | 100 x 2-mL vials in 1 tray<br>40 x 2-mL vials in 1/2 tray<br>15 x 6-mL vials in 1/2 tray (Agilent vials only)                                      |
| Injection cycle time                                   | Typically 50 s depending on draw speed and injection volume  |
| Carryover  | Typically < 0.1 %, < 0.05 % with external needle cleaning  |
| Pressure operating range                               | Up to 600 bar (60 MPa or 8702 psi)   |
| Agilent 1260 Infinity Thermostatted Column Compartment |  |
| Temperature range                                      | 10 degrees below ambient to 80 °C  |
| Temperature stability                                  | ± 0.15 °C  |
| Temperature accuracy                                   | ± 0.8 °C with calibration ± 0.5 °C   |
| Column capacity  | Three 30 cm columns  |
| Heat-up/cool-down time                                 | 5 min from ambient to 40 °C  |
|  | 10 min from 40 °C to 20 °C   |
| Internal volume  | 3 µL left heat exchanger   |
|  | 6 µL right heat exchanger  |
| GLP  | Column identification module for GLP documentation of column type  |

| Agilent 1260 Infinity Refractive Index Detector |   |
|---|---|
| Detection type                                  | Deflection method   |
| Short-term noise                                | ± 2.5 x 10 <sup>-9</sup> RIU  |
| Drift   | < 200 x 10 <sup>-9</sup> RIU/h  |
| Refractive index range                          | 1.00 - 1.75, calibrated   |
| Flow cell                                       | 8 µL, 5 bar pressure maximum  |
| Temperature control                             | Ambient +5 °C to 55 °C  |
| pH range  | 2.3 - 9.5   |
| Time programmable                               | Polarity, peak width  |
| Zero adjustment                                 | Automatic zero  |
| Valves  | Automatic purge and automatic solvent recycle   |
| Data rate                                       | Up to 37 Hz   |
| Analog output                                   | Recorder/integrator: 100 mV or 1 V, with offset adjustment, RIU range selectable  |
| Communications                                  | Local Area Network (LAN), Control Area Network (CAN), RS-232, APG remote, remote ready, start and shutdown signals  |
| Safety and maintenance                          | Extensive diagnostics, error detection and display leak detection, safe leak handling, leak output signal for shutdown of pumping system, low voltage in major maintenance areas  |
| GLP   | Early maintenance feedback (EMF) for continuous tracking of instrument usage with user-settable limits (purge interval) and feedback messages. Electronic records of maintenance and errors, automated OQ/PV procedures |

## Ordering Information

| Part Number | Description                                    |
|-------------|--|
| G1310B      | 1260 Infinity Isocratic Pump                   |
| G1322A      | 1260 Infinity Standard Degasser                |
| G1362A      | 1260 Infinity Refractive Index Detector        |
| G1314F      | 1260 Infinity Variable Wavelength Detector     |
| G1316A      | 1260 Infinity Thermostatted Column Compartment |
| G1328C      | 1260 Infinity Manual Injector                  |
| G1329B      | 1260 Infinity Standard Autosampler             |
| G7850AA     | Agilent GPC/SEC Software                       |
| G7854AA     | Agilent GPC/SEC Instrument Control             |

[www.agilent.com/chem/gpc](http://www.agilent.com/chem/gpc)

This information is subject to change without notice.

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