SECcurity GPC viscosity detector ETA2010

for GPC/SEC Polymer Analysis

The Instrument

The ETA2010 differential viscosity detector is designed to meet the requirements of modern GPC/SEC applications. Low-noise electronics combined with high-sensitivity, high solvent resistant pressure transducers as well as superior sample path design with asymmetric 80:20 split results in an excellent detection limit and high signal linearity. The instrument was designed for ease-of-use and trouble-free operation. Many instrument functions have been automated or are accessible by just pressing a single key. Solvent change and degassing of the reference cell are done by a solenoid valve. This results in easy handling and safe operation especially if toxic solvents are used. The use of a hold-up reservoir reduces the analysis time to 50% compared with other viscometers.

The Applications

In GPC/SEC analysis, on-line viscometers are used to determine the intrinsic viscosity, which describes the reciprocal molecular density of polymers in solution.
When the ETA viscometer and a Refractive Index detector are coupled to a GPC/SEC system the comprehensive polymer analysis according to the universal calibration can be made.
Synthetic, natural, and biopolymers in solution can be characterized comprehensively:
true molecular weight and its distribution, size, structure, branching, and aggregation can be analyzed. The combination with a 90° light scattering detector allows triple molar mass determination. The combination with a MALLS detector allows characterization without any assumptions.

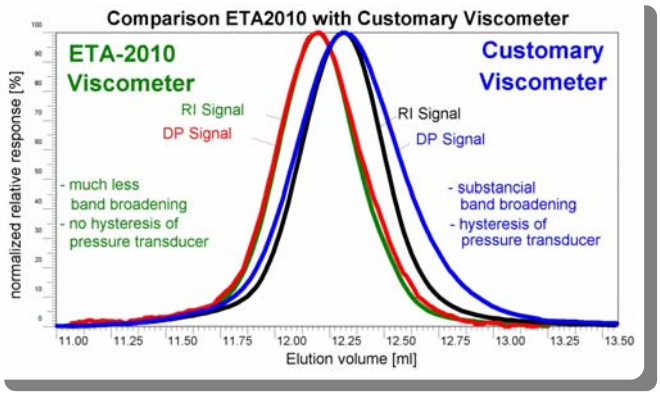
PSS Polymer Standards Service GmbH
D55120 Mainz In der Dalheimer Wiese 5
Tel: (+49)6131-962390 Fax: (+49)6131-9623911
Email: info@polymer.de www.polymer.de

DIN EN ISO 9001:2000
Zertifikat: 01 100 84065

PSS Polymer Standards Service, USA Inc.
43 Jefferson Blvd. Suite 3 Warwick, RI, 02888, USA
Phone: 401-780-8884 Fax: 401-780-8824
Email: info@pssgpcshop.com www.pssgpcshop.com

The Measuring Principle

Th e ETA2010 viscometer consists of a network of flow resistances. If the branches are filled with pure solvent, the differential pressure measured by the pressure transducers will be zero. When a sample is introduced, it will be split 80:20, following two different paths. In the reference path 20% of the sample will be diluted in a reservoir assuring that only solvent continues to flow through this path. In the sample path, the sample just flows through the flow resistance This causes an imbalance which is measured as a pressure difference. A second pressure transducer measures the absolute solvent pressure drop across the bridge. The specific viscosity of the sample is then calculated from the two measured pressure signals.



The Unique Advantages

Main advantages of this design are high sensitivity and high signal-to-noise ratio, low shear rate and a lower sample cell volume compared to similar viscometers.

- high sensitivity: high signal to noise ratio allows applications even in the low molecular weight range
- small cell volume: prevents band broadening and shows real peak shapes without tailing or fronting
- fast response: due to pressure transducers without hysteresis
- self degassing pressure transducers: for trouble-free operation
- temperature controlled: guarantees constant operating conditions (optional to 150°C)
- ease of operation: only two keys for flush (purging the reservoirs) and Auto Zero (zero the pressure signals) required
- high operational safety and low life cycle costs: automatic bypass of pressure transducers by excess pressure, obstruction, or operating problems
- seamless software: all functions are integrated in PSS WinGPC Unity software

Specification	
Differential Pressure Range	-1.6 to +10.0 kPa
Inlet Pressure Range	0 to 150 kPa
Detector Volume (Sample)	15 µl
Noise Level	0.2 Pa, differential pressure signal, 25°C
Temperature Range	room temp. up to 80°C, hightemp. model up 150°C
Digital Input	Flush, Zero, Sync, Error
Digital Output	Sync, Error
Digital Interface	RS-232C, USB, LAN
EC Conformity	acc. to EMV, EN, IEC
Ordering information	
402-0001	GPC detector with temperature control up to 80°C
402-0015	GPC detector with temperature control up to 150°C

PSS Polymer Standards Service GmbH
D55120 Mainz In der Dalheimer Wiese 5
Tel: (+49)6131-962390 Fax: (+49)6131-9623911
Email: info@polymer.de www.polymer.de

DIN EN ISO 9001:2000
Zertifikat: 01 100 84065

PSS Polymer Standards Service, USA Inc.
43 Jefferson Blvd. Suite 3 Warwick, RI, 02888, USA
Phone: 401-780-8884 Fax: 401-780-8824
Email: info@pssgpcshop.com www.pssgpcshop.com