LAUDA scientific

LAUDA Scientific Autosampler VAS –
Safe automatic measurements of polymers

Solution viscosity – Compliant determination of molecular mass

Viscosity measurements are a unique tool to characterise polymers according to international standards. It is not only a very precise, but also a very cost-effective method.

$$M = \left(\frac{1}{K} v_{int}\right)^{\frac{1}{a}}$$

K, a	Mark-Houwink parameters
v_{int}	Intrinsic viscosity
M	Average molecular mass

All polymer-related international standards are based on the fundamental correlation of viscosity of diluted polymer solutions with molecular mass, which can be described by the Mark-Houwink equation.

High tech performance polymers require a special and thorough quality control, which allows traceability of all relevant quality parameters and guarantees performance compliance. The LAUDA Scientific Autosampler VAS is a huge step for solution viscometry in that direction.

2 or 4 measuring positions – the choice is yours

The LAUDA Autosampler VAS is available in two different sizes:

- The 4-place VAS: Based on the Viscotemp Pro 24 bath, up to four measuring stands can be integrated. This configuration allows a maximum sample throughput of up to 150 samples per day.
- The 2-place VAS: The compact alternative based on a Viscotemp Pro 15 bath which also fits into a standard fume cupboard and allows up to 50 samples per day.

Highest modularity and easy upgrade

LAUDA Scientific viscosity measuring systems have a modular design. You can upgrade and extend your existing system at any time.

- Upgrade your existing Viscotemp Pro 15 or Viscotemp Pro 24 bath with an Autosampler VAS to meet your growing demands
- Additional cleaning/rinsing modules can be added
- Automatic sample filtration can be integrated for the removal of glass fibres and other fillers
- Extension with automatic sample preparation, integrated into the VAS software

Advantages of the Autosampler VAS

Decades of experience are reflected in the PVS system. Handling of aggressive solvents, quality and robustness you can rely on in everyday laboratory work.

- All surfaces that come into contact with solvents are made of high-quality, chemical-resistant stainless steel or titanium.
- Viscometer sample locks are made of acid-resistant special polymer
- All liquid-carrying hoses are made of PTFE
- All seals are made of fluor elastomer
- Various sample volumes and sample containers selectable (30 ml, 50 ml or 100 ml)
- Easy maintenance due to modular design

The PVS –
Your partner for all polymers

The PVS with the Autosampler VAS enables you to perform standard-compliant measurements of all commercially common polymers (from PA to cellulose).

- Meets all standard requirements
- Special version of the cleaning modules for sulphuric acid available (Polyamide / Nylon)
- Titanium version for dichloroacetic acid

Polymer	Temp.	Solvent	International standard
Polyamide	25 °C 25 °C 25 °C	Sulphuric acid (96 %) m-Cresol Formic acid (90 %)	DIN 53727, ISO 307 DIN 53727, ISO 307 DIN 53727, ASTM D789
Polycarbonate	25 °C	Dichloromethane	DIN 7744, Part 2, ISO 1628/6
Polyethylene terephthalate / polybutylene terephthalate	25 °C 30 °C 25 °C	Phenol / dichlorobenzene 1:1 Phenol / tetrachloroethane 60:40 Dichloroacetic acid	DIN 53728, ISO 1628/4 ASTM D4603
Polyvinyl chloride	25 °C	Cyclohexanone / tetrahydrofuran	DIN 53726
Polystyrene	25 °C	Toluene / o-xylene / 1,2 dichlorobenzene	DIN 7741, Part 2
Polymethylmethacrylate PMMA	25 °C	Chloroform / acetophenone	DIN 7745, Part 2
Cellulose acetate	25 °C	Dichloromethane / methanol (9:1 volume parts)	DIN 53728, Part 1

Comprehensive safety-at-work

Automatic sample handling with the Autosampler VAS improves safety-at-work and efficiency alike.

- The samples are automatically transferred from the sample vials into the assigned viscometers. The samples are measured and disposed of subsequently into waste.
- High level of safety for the user due to seriously reduced contact with chemicals
- Inert and corrosion-free, even for aggressive solvents
- Safe hose connection and automatic cleaning
- 21 CFR Part 11-compliant software for high data security
- No glass breakage of viscometers due to Visco.Fix system

Simple workflow in the laboratory

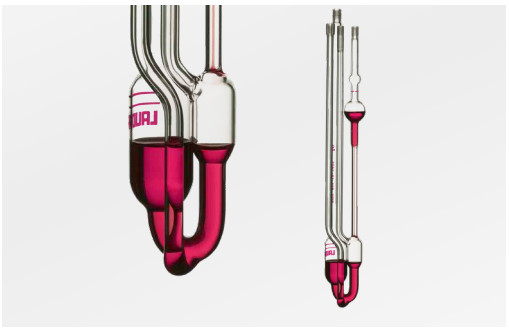
The PVS with Autosampler VAS follows your workflow requirements. Different sizes of sample vials allow the integration into your daily lab routine. Automatic procedures increase your efficiency.

- Automatic sample handling and filling of viscometers
- Optimized sample throughput
- Flexible assignment of machining priorities
- “Clean-to-clean“ workflow
- “Sample-to-result“ workflow
- Waste management
- Fully automated measuring, 24/7
- The viscometers are flushed automatically after the measurement and actively cleaned
- Individual adjustment of cleaning procedures according to your sample requirements
- Freely programmable sample priorities for urgent measurements

Precision by automatic sample preparation

In addition to the automatic measurement, we offer automatic sample preparation. The LAUDA Scientific Sample Preparation System LMVZ977 is seamlessly integrated into the PVS/VAS software and enables an efficient workflow in the laboratory.

- Convenient routine work due to automatic sample weighing and solvent dosing
- Precise and user-independent sample concentration through automatic dosing allows reproducible measurements
- Highest level of safety-at-work due to minimized handling of aggressive solvents
- Precise measurements with no sample carry-over



A huge range of viscometers

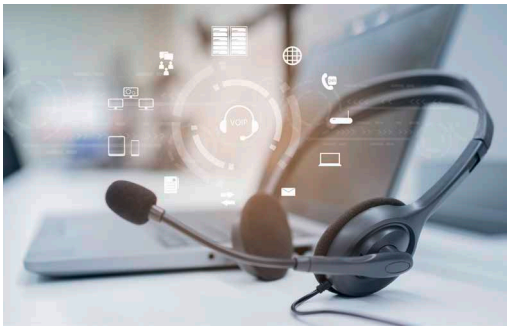
The core of the PVS system with the Autosampler VAS are the viscometers. LAUDA Scientific offers all common types of viscometers in accordance with international standards.

- Standard-compliant viscosity measurement with Ubbelohde, Micro-Ubbelohde, Cannon Fenske routine
- Perfectly positioned ring marks without interfering with automatic meniscus detection
- Durable and traceable due to corrosion resistant label
- Precise measurements with Ubbelohde viscometers with calibration certificate

Bench-space requirements

As fume cupboards are commonly used to meet safety-at-work requirements, solution viscosity might be placed there as well. With our 2- or 4-place Autosamplers VAS, we offer flexible solutions which fit into your infrastructure.

- Dimensions 2-place VAS: 0.88 m x 1.09 m (W x H), fits into 90 cm standard fume cupboard
- Dimensions 4-place VAS: 1.14 m x 1.09 m (W x H), fits into 120 cm standard fume cupboard



Worldwide support

We offer you not only instruments but also professional advice and support for your individual configuration, installation and operation of viscometer systems.

- Worldwide support and service
- Service and maintenance contracts
- IT Support for integration into laboratory information systems
- IT Support for operating system migrations
- IQ/OQ documentation

www.lauda-scientific.de

LAUDA Scientific GmbH
Laudaplatz 1
97922 Lauda-Königshofen
Germany

Phone: +49 (0) 9343 503-340
E-Mail: info@lauda-scientific.de

05-433-en-02__2024-08