Anton Paar

Stabinger Viscometer™ Series

SVM™ Series

Welcome to New Viscometry

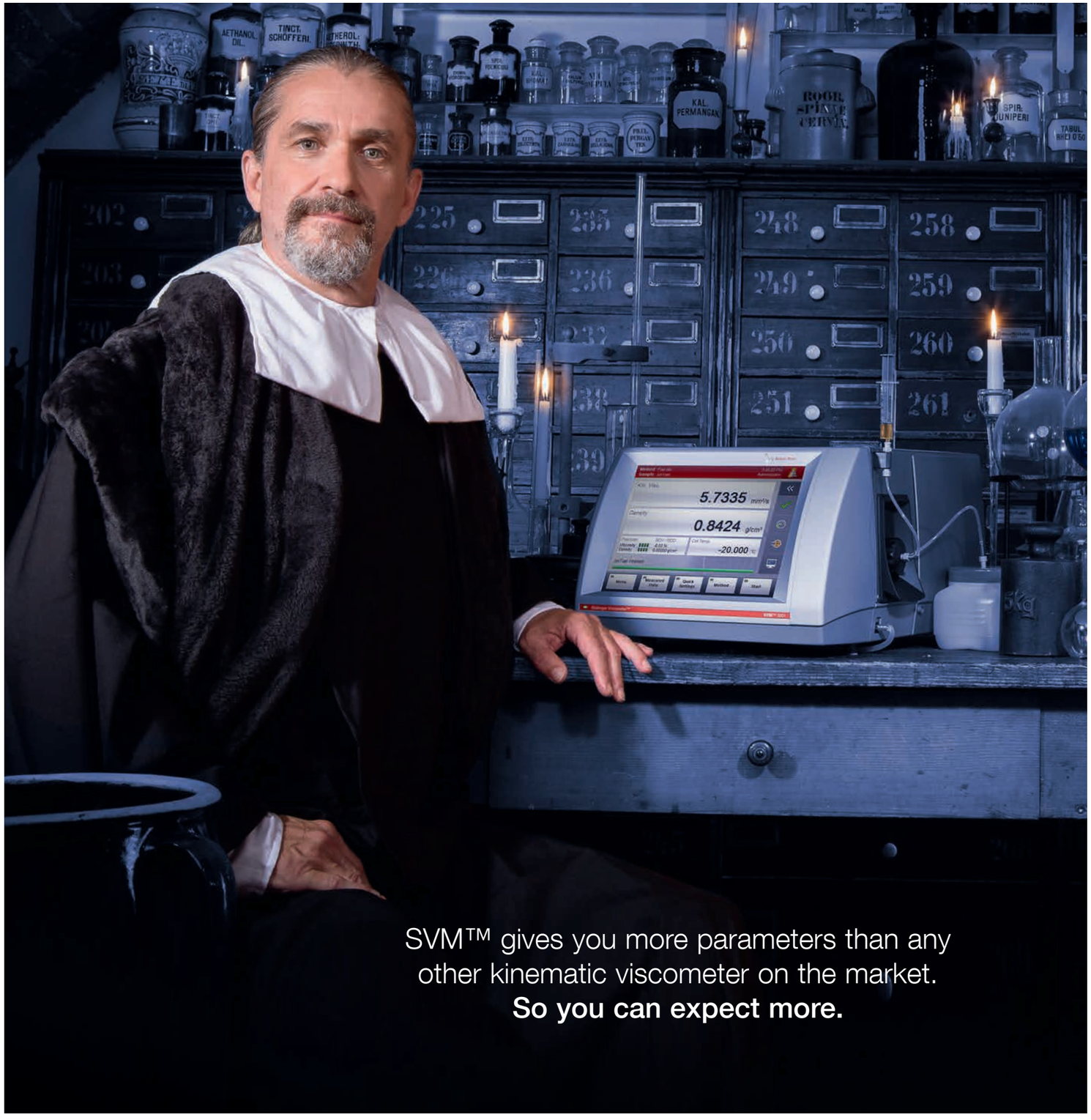
This is Wilhelm. He's a little old-fashioned and doesn't like change. That's why he used glass capillaries to measure viscosity – up until recently.

Although he was skeptical, Wilhelm allowed a young colleague to show him the new SVM™ viscometer from Anton Paar. He was really surprised by how fast and easy SVM™ delivers a number of important parameters at once. As Wilhelm is smart, he immediately recognized the great potential of this new approach. He got one of these viscometers for his own work and is now overjoyed at how easy it is to operate. Without his new SVM™, Wilhelm would have to sit for hours in front of his capillaries – waiting and waiting.

But not anymore. A new world has opened up for him:
the world of New Viscometry.

Enjoy the whole story here/on:

YouTube



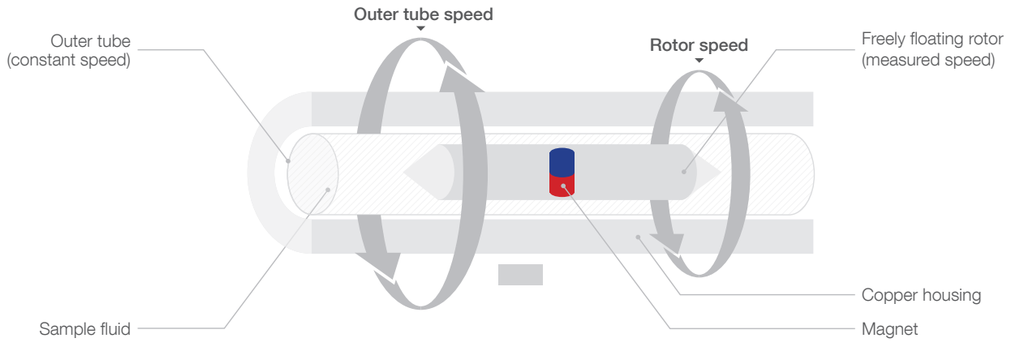
Expect more – Measuring viscosity with an SVM™ is easy, fast, and accurate.

Your benefits at a glance

- Multiple parameters from just one syringe
- Low sample and solvent volume
- Unbeatable ease of operation
- Wide measurement range for viscosity, density, and temperature
- One measuring cell for the entire measurement range

Measuring principle

The highly precise Stabinger Viscometers™ are based on the Couette measuring principle and have an integrated density measuring cell. The small viscosity measuring cell contains a tube which rotates at a constant speed and is filled with sample fluid. A measuring rotor with a built-in magnet floats freely in the sample. The sample's shear forces drive the rotor while magnetic effects retard its rotation. Shortly after the measurement start, the rotor reaches equilibrium speed. This speed is a measure of the fluid's viscosity. The kinematic viscosity is automatically calculated from the dynamic viscosity and density of the sample.



These features make the difference

There is an SVM™ viscometer for every application: ranging from measuring lubricating oils, used oils, crude oils, heavy fuels, distillate fuels to vegetable oils and fats. While SVM™ 3001 has unparalleled heating rates of up to 20 °C/min, SVM™ 4001 is the best choice for fast Viscosity Index determination. Results are obtained much faster than using the glass capillary principle.

SVM™ 4001

The best solution for Viscosity Index

- Innovative double-cell design for simultaneous measurements at 40 °C and 100 °C
- The fastest ASTM-(D2270)-compliant Viscosity Index determination from the lowest sample volume
- State-of-the art intuitive software with 15 different parameters shown on the main screen

Twice the benefits

- Simultaneous determination of viscosity and density at any two temperatures between 15 °C and 100 °C
- Viscosity-temperature extrapolation according to ASTM D341
- Freely selectable API grades shown on the 10 x 4” touchscreen

SVM™ 3001

Wide temperature range from -60 °C to +135 °C

- From jet fuel and diesel fuel to lubricating oils and wax – with one integrated cell
- Fast heating and cooling rates of up to 20 °C/min
- Built-in air cooling down to -20 °C
- Cooling down to -60 °C using external cooling (i.e. water/glycol mixture)

More information with temperature scans

- Temperature scans deliver fast and easily obtainable information on the temperature-dependent behavior of your liquid
- Temperature table scans for viscosity and density determinations at freely selectable temperatures
- Low-temperature studies on pumpability behavior

SVM™ 4001 SVM™ 3001 SVM™ 2001

Unbeatable ease of operation

- Factory-adjusted: ready for immediate use
- Simply inject the sample with a syringe and start the measurement
- Easy and safe handling without leaks or breakage
- Tool-free access to measurement cell for easy cleaning
- Low-maintenance

SVM™ 4001 SVM™ 3001

Multiple parameter measurement from a single syringe

- Kinematic viscosity (ASTM D7042, EN 16896, DIN 51659-2)
- Viscosity Index (VI) (ASTM D2270)
- Density (EN ISO 12185, ASTM D4052, IP 365)
- Dynamic viscosity (ASTM D7042)
- API grades (ISO 91, API 2540, ASTM D1250, IP 200)
- Saybolt viscosity (ASTM D2161)

FillingCheck™

- Newly developed density oscillator with patented FillingCheck™
- FillingCheck™ monitors the filling quality of the density cell in real time
- Compliant with D4052 requirements
- Saves valuable operating time

Your application –Your benefits

SVM™ 3001

Distillate fuels

- Fast heating and cooling rates of up to 20 °C/min
- Simultaneous determination of kinematic viscosity and density at any chosen temperature over a broad range
- Robust metal measuring cells
- Optional autosampler with up to 71 positions

Compliance with: ASTM D7042, D2880, and D4052, EN 16896
Product specifications: ASTM D975 and D396

SVM™ 3001

Heavy fuels

- Robust measuring cells made of metal
- Precise Peltier temperature control up to +135 °C
- Unprecedented heating and cooling rates of up to 20 °C/min
- Simultaneous determination of kinematic viscosity and density
- Tool-free access to the measurement cell for easy cleaning

Compliance with: ASTM D7042 and D4052, ISO 12185

SVM™ 3001

Low temperature: Jet fuel, brake fluids, hydraulic fluids

- Measurements at -20 °C without external cooling
- Methanol-free cooling down to -60 °C; no flammable cooling liquids necessary
- Temperature scans for comprehensive information on low-temperature fluidity
- Cleaning and drying at sub-zero temperatures without warming up in between

Compliance with: ASTM D7042 and D4052
Product specifications: ASTM D1655, D7566, DEF STAN 91-91, and JIG AFQRJOS

SVM™ 3001 with Abbemat refractometer

Transformer oils: Carbon-type composition

- Modular combination of SVM™ with Anton Paar refractometers
- Simultaneous measurement of viscosity, density and refractive index from one syringe
- Calculations of carbon-type composition and carbon distribution according to ASTM D2140 and D3238
- All results are automatically calculated and displayed on the main screen within minutes

Compliance with: ASTM D7042, D4052, D341, D2501, D2502, D3238, and D1218 (refractive index)
Calculations according to: ASTM D2140 and D3238

SVM™ 4001

Lubricating oils, base oils and additives | Oil condition monitoring

- Simultaneous measurements at two different temperatures for fast Viscosity Index determination
- Simultaneous measurement of kinematic viscosity and density for each temperature
- Heated and non-heated sample changers (optional)
- Newly developed magnetic particle trap (optional)

Compliance with: ASTM D7042, D4052, D7152 and DIN 51659-2; ISO 12185, ISO 91
Standard practices: ASTM D2270, D341, D6074

SVM™ 2001

Vegetable oils and fats | Raw materials for cosmetics

- Simultaneous determination of dynamic and kinematic viscosity
- Measurements at any temperature between 15 °C and 100 °C
- Easy and fast measurement from one syringe
- Optional autosampler with up to 71 positions

Compliance with: ASTM D7042

Accessories that enable results

Automated sample changing

Maximize your productivity and minimize costs by employing sample changers from Anton Paar. Select an automatic system according to your needs and plug it in – SVM™ automatically recognizes it and is ready to go – you are free to do other important work. Choose either Xsample™ 340, a single unit for different types of syringes, or Xsample™ 530, a magazine sample changer for up to 71 vials. The newly developed Xsample™ 630 allows precisely controlled heating of 36 samples up to 95 °C.

Removal of magnetic particles from used oil samples

The newly developed magnetic particle trap is an accessory designed to remove ferromagnetic particles from in-service oils. It is located close to the sample inlet to gather magnetic particles and keep them away from the measuring cell. The magnetic trap is electrically heated for optimized removal of ferromagnetic particles from the sample by decreasing the sample‘s viscosity.

Easy filling of highly viscous samples

The hot filling attachment keeps your sample warm for easy filling and prevents sample freezing (available for SVM™ 3001 and SVM™ 2001). Highly viscous samples are easily refilled for repeat measurements. The hot filling attachment is ideal for measuring samples with high melting points (such as wax) or samples with high pour points (such as heavy fuel or tar).

Simple determination of carbon-type composition

Your SVM™ can be combined with Anton Paar‘s Abbemat refractometer for simultaneous measurement of viscosity, density and refractive index from one syringe. This enables you to calculate carbon-type composition and carbon distribution according to ASTM D2140 and D3238. All results are automatically calculated and displayed on the main screen within minutes. Available with SVM™ 3001 and SVM™ 4001.

Specifications

	SVM™ 2001	SVM™ 3001	SVM™ 4001
Patents granted	AT5 AT516058 (B1), AT516302 (B1) 16058 (B1), AT516302 (B1)		
Temperature range	+15 °C to +100 °C	-60 °C to +135 °C	+15 °C to +100 °C
Viscosity range	0.2 mm²/s to 30 000 mm²/s		
Density range	0.6 g/cm³ to 3 g/cm³		
Viscosity repeatability*	0.1 %	0.1 %	0.1 %
Viscosity reproducibility*	0.35%	0.35%	0.35%
Density repeatability*	0.0002 g/cm³	0.00005 g/cm³	0.00005 g/cm³
Density reproducibility*	0.0005 g/cm³	0.0001 g/cm³	0.0001 g/cm³
Temperature repeatability	0.005 °C (0.009 °F)	0.005 °C (0.009 °F)	0.005 °C (0.009 °F)
Temperature reproducibility	0.03 °C (0.054 °F) from 15 °C to 100 °C	0.03 °C (0.054 °F) from 15 °C to 100 °C 0.05 °C (0.09 °F) outside this range	0.03 °C (0.054 °F) from 15 °C to 100 °C
Main standards	ASTM D7042, EN 16896	ASTM D7042, EN 16896 ASTM D4052, ISO 12185	ASTM D7042, EN 16896 ASTM D4052, ISO 12185
Supported precision classes	Ultrafast, Fast and Precise	Ultrafast, Fast, Precise and Ultraprecise	Ultrafast, Fast, Precise and Ultraprecise
Sample volume min./typical	1.5 mL / 5 mL	1.5 mL / 5 mL	2.5 mL / 6 mL
Solvent volume min./typical	1.5 mL / 6 mL	1.5 mL / 6 mL	2.5 mL / 10 mL
Maximum sample throughput	30 samples per hour		24 samples per hour
Peltier temperature control	Designed for constant temperature	Designed for fast heating/cooling over a wide range	Designed for simultaneous measurement at any two different temperatures within the range
Optional automation	Non-heated: Single syringe (2 mL, 5 mL or 10 mL) or 45 vials (35 mL) or 71 vials (12 mL) Heated: 36 vials (12 mL) or single sample filling (from 12 mL vial)		
Wetted parts	Inside the instrument: Copper, Titanium, Stainless steel A4, Inconel®		
O-rings in contact with sample	Viton® Extreme	Kalrez® Spectrum 0040	Viton® Extreme
Data memory	1000 measurement results		
HID (Human Interface Device)	Touchscreen; optional keyboard, mouse and 2D bar code reader		
Interfaces	4 x USB (2.0 full speed); 1 x Ethernet (100 Mbit); 1 x CAN bus; 1 x RS-232; 1 x VGA		
Power supply	AC 100 V to 240 V; 50 Hz to 60 Hz; 250 VA max.		
Ambient conditions	15 °C to 35 °C (59 °F to 95 °F), max. 80 % r.h. non-condensing		
Net weight/shipping weight	15.9 kg/20.5 kg	17.6 kg/22.2 kg	17.8 kg/22.4 kg
Dimensions (W x D x H)	33 cm x 51 cm x 23.1 cm (13 in x 20 in x 9.1 in)		
Compliance	CE mark; EMC directive EN 61326-1; LV directive EN 61010-1; RoHS		
Special features	Optional automation	Automatic VI method, API calculations, temperature scans, FillingCheck™. Optional: Countercooling, automation, modularity with Abbemat refractometers	Double measurement cells for simultaneous viscosity and density measurement at any two different temperatures in the range, VI method, API calculations, FillingCheck™. Optional: Automation, modularity with Abbemat refractometers

*Attested at the points of the works adjustment or at calibration correction points, not including the uncertainty of the standards.
Valid for ideal measuring and sample conditions within the works adjustment range.

All data refer to stand-alone instruments.
For more information, please contact your Anton Paar representative.

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