

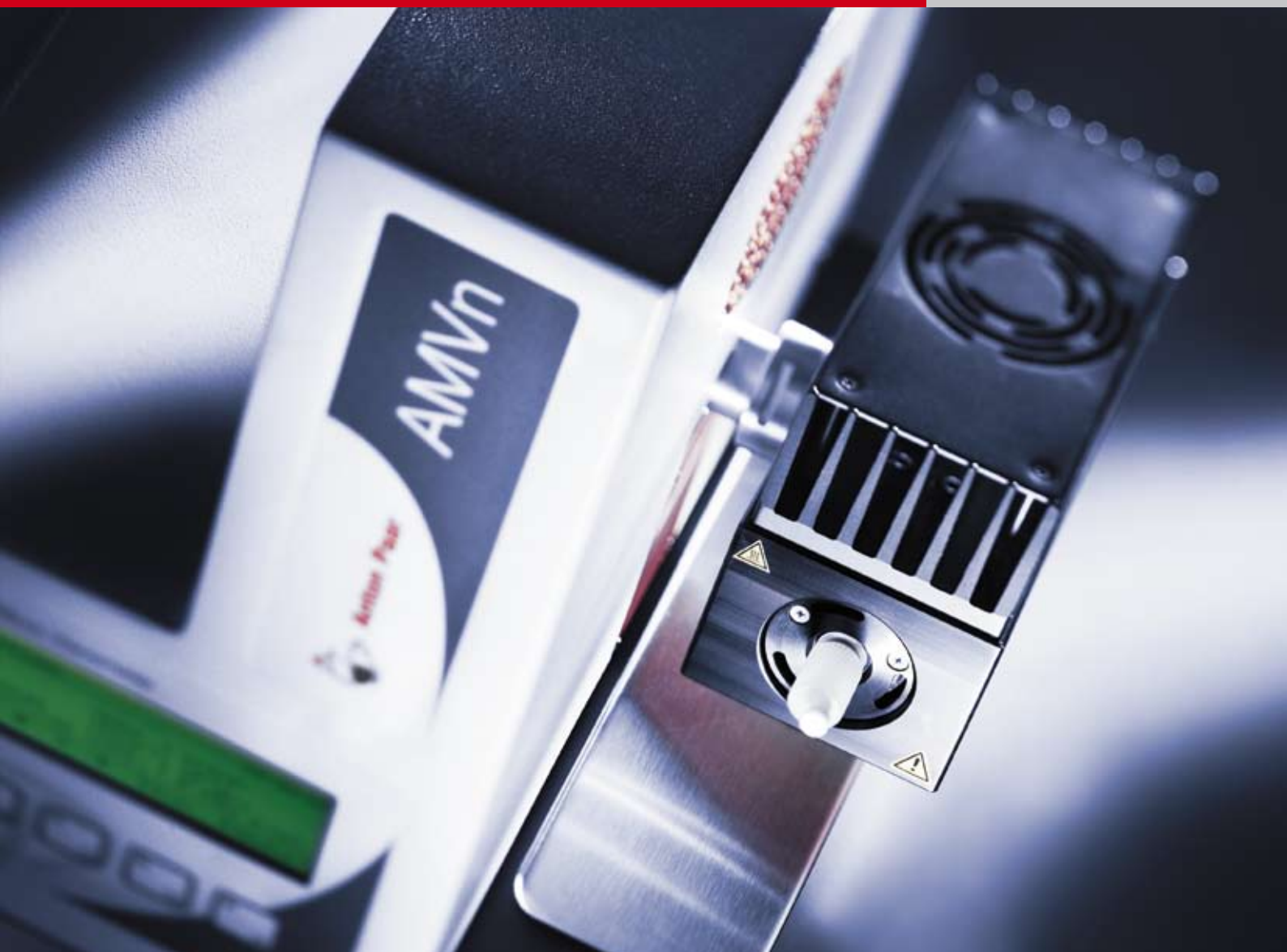


Anton Paar

AMVn

Automated Microviscometer

::: Viscometry at its best



AMVn

Automated Microviscometer

High-precision viscosity measurements for low viscosity substances

AMVn is based on the approved and acknowledged rolling/falling ball principle according to DIN 53015 and ISO 12058 and packaged in a user-friendly design.

The variable inclination angle of the measurement capillary allows both the variation of shear stress and shear rate and the easy repetition of measurements. The built-in Peltier thermostat provides high-precision temperature control and saves substantial lab space.



Measuring principle

The measuring principle is based on Stoke's law. The viscosity of a liquid is determined by observing the rolling time of a solid sphere under the influence of gravity in an inclined cylindrical tube filled with the sample liquid. The time taken by the ball to travel the fixed distance is measured with two inductive sensors.

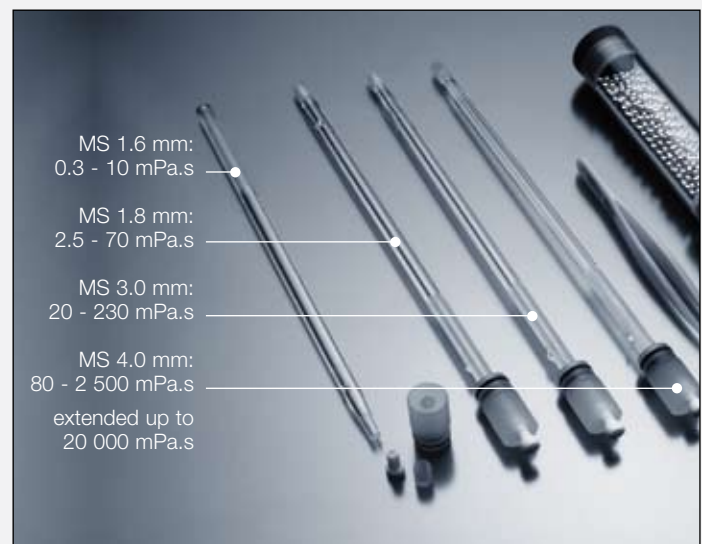
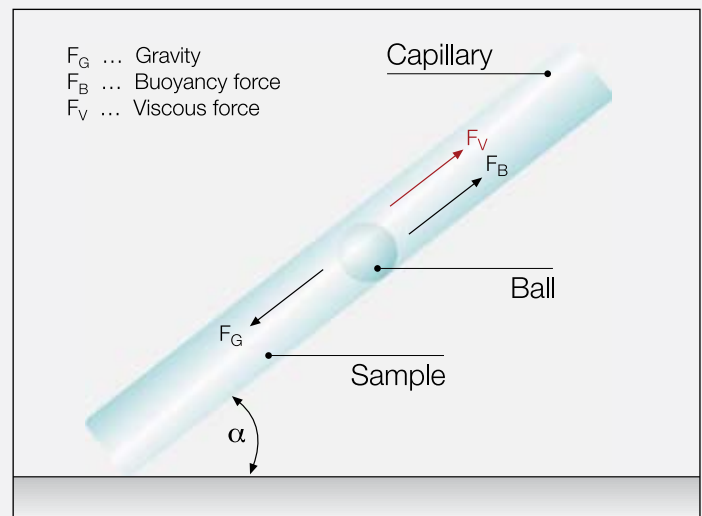
For each single measured rolling time, the result can be expressed as dynamic viscosity (mPa.s) and kinematic viscosity (mm^2/s) if the sample density is known.

Measuring system – viscosity range

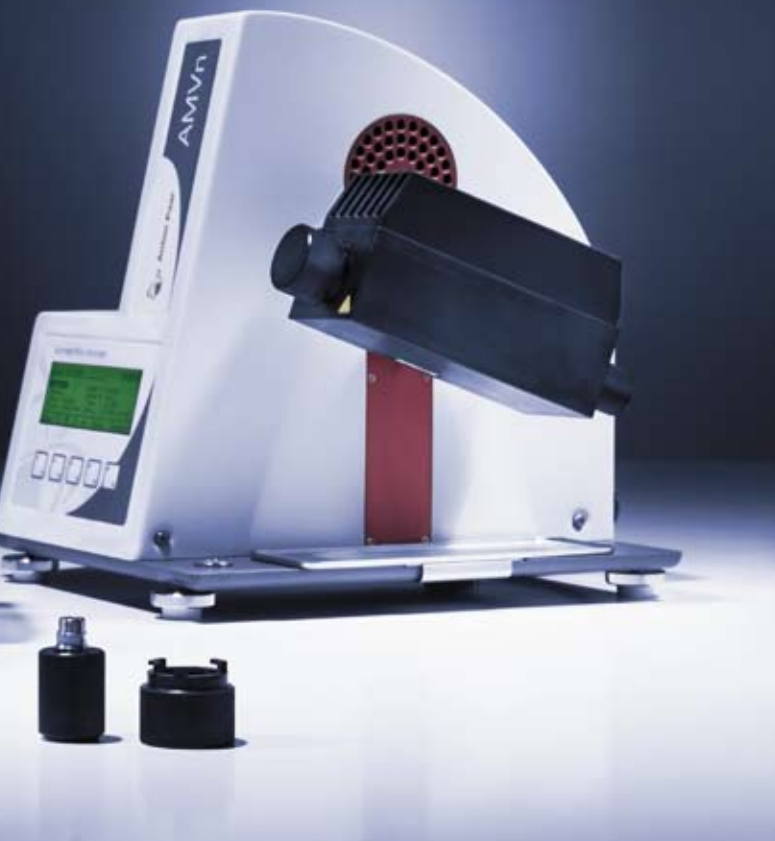
A measuring system (MS) is a specified capillary/ball combination. Four different measuring systems are used to cover the whole viscosity range (0.3-20 000 mPa.s). Our ball dispenser ensures easy handling of the different balls.

A low volume measuring system - requiring only 150 μl of sample - is available for special applications.

All wetted parts of the measuring systems are made of borosilicate glass, gold plated stainless steel or PCTFE.



Features and benefits



- ▶ High-precision and reproducibility
- ▶ Extremely small sample size required (150 µl)
- ▶ Closed measuring system – no sample/air contact
- ▶ All delivered measuring systems are calibrated
- ▶ Built-in Peltier thermostat
- ▶ Variable inclination angle of the capillary
- ▶ Stand alone or PC-controlled via Windows software (VisioLab)
- ▶ Combination with Anton Paar autosampler
- ▶ Combination with DMA/DSA/Beer Analyzer/RXA

Specifications

Viscosity range

0.3 to 2 500 mPa.s (20 000 mPa.s*)
Repeatability: < 0.1 %
Reproducibility: < 0.5 %

Time measuring range

0 to 250 s (1 000 s*)
Resolution: 0.001 s
Accuracy: < 0.002 s

Temperature range

+5 to 135 °C
Resolution: 0.01 °C
Accuracy: < 0.05 °C

Power

85 to 264 V AC, 50 60 Hz, 75 VA

Dimensions (W x H x D)

270 x 340 x 310 mm

Weight

14 kg

Required sample volume

0.15 mL ... 2.5 mL

Options

Printer, keyboard,
Visiolab software

Applications for quality control and research

- ▶ Food industry (beer, wort, milk, sugar solutions)
- ▶ Chemical industry (polymer solutions, solvents)
- ▶ Pharmaceutical industry (cosmetics, extracts)
- ▶ Biological fluids
- ▶ Detergents (liquid agents, tenside solutions)
- ▶ Inks
- ▶ Blood plasma
- ▶ Liquid crystal

*extended measuring range available on request

Measuring assemblies



System configuration

The AMVn viscometer can be connected to Anton Paar density meters and/or sound velocity analyzers (for the simultaneous determination of viscosity, density and sound velocity).



Setup in breweries and malt houses

In breweries and malt houses, AMVn is used in combination with Anton Paar density and/or sound velocity analyzers and an automatic sample changer. The Visiolab Windows software provides process controlling, methods management and data handling.

AMVn measures the viscosity of congress wort. This is a standard parameter according to the MEBAK methods. The measurement gives information on the malt modification, filterability and foam stability.



Setup for determining the intrinsic viscosity of polymer solutions

The intrinsic viscosity can be seen as the "identity card" of a polymer solution. It characterizes a macromolecule in respect to its molecular weight and to its interactions with the solvent. An extrapolation to concentration $c=0$ and an extrapolation to shear rate $D=0$ are necessary to obtain the correct value of the intrinsic viscosity and information on the macromolecule at rest.



VisioLab - optimal software solution

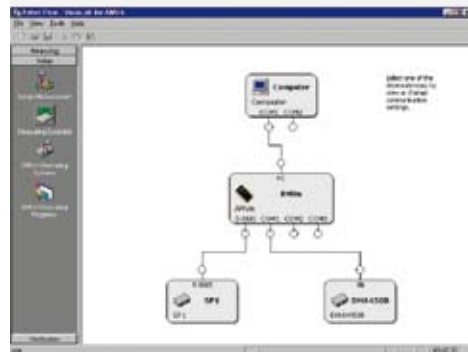
VisioLab - Windows software

A unique software solution that allows you either to control AMVn or to combine AMVn with other instruments from Anton Paar (density meters, sound velocity analyzers, autosamplers).

This enables you to obtain other values besides the viscosity simultaneously from one sample, saving both time and money.

The universal software performs process controlling, data acquisition and evaluation. All settings and results are stored automatically in Excel sheets.

VisioLab - easy to handle with a state-of-the-art visual design.



<< Fig. 1

>> Fig. 1
Measuring Assembly
 Graphical display of connected instruments



<< Fig. 2

>> Fig. 2
New Measurement
 All measurement settings are selected in one window



<< Fig. 3

>> Fig. 3
Actual Measurement
 Clearly arranged results, easy evaluation



Fotos: Croce & Wir



Anton Paar

Anton Paar[®] GmbH
Anton-Paar-Str. 20
A-8054 Graz
Austria - Europe
Tel: +43 (0)316 257-0
Fax: +43 (0)316 257-257
E-mail: info@anton-paar.com
Web: www.anton-paar.com



Instruments for:

Density & concentration
measurement

Rheometry and viscometry

Sample preparation

Colloid science

Microwave synthesis

X-ray structure analysis

CO₂ measurement

High-precision temperature
measurement

Specifications
subject to change
without notice.

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