

BUBBLE PRESSURE TENSIOMETER – BP100



THE PRECISION INSTRUMENT FOR
ANALYZING SURFACTANT DYNAMICS

KRÜSS

Advancing your Surface Science



DYNAMIC MEASUREMENT, CONSTANT ACCURACY

- Precise analysis of surfactant solutions for fast processes
- Quality assurance for galvanic and cleaning baths

With decades of experience in interfacial chemistry, we at KRÜSS develop solutions for particular tasks in research, development and quality assurance. Our measuring methods realistically replicate process conditions such as temperature, pressure and speed. In the field of tensiometry, our instruments support the development and optimal use of surfactants for a variety of applications.

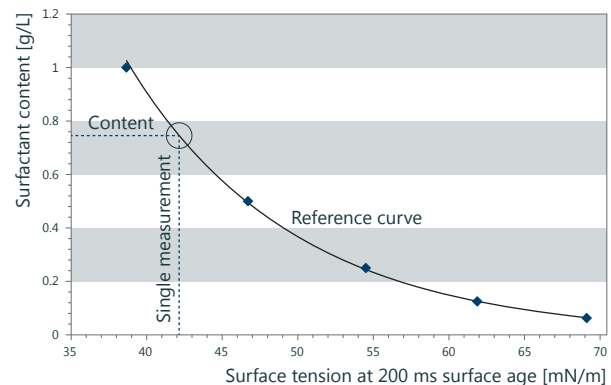
One example is the Bubble Pressure Tensiometer – BP100. This high-quality laboratory unit is our special instrument for measuring dynamic surface tension (SFT). It reliably analyzes the mobility of surfactants and thus makes it possible to optimize their use in fast interfacial processes, such as spraying, printing, painting and cleaning.

Dynamic surface tension in a very wide speed range

The BP100's high-precision pressure sensor measures the SFT of a surfactant solution based on the internal pressure of gas bubbles produced in the sample by a capillary. The instrument adjusts the required surface age exactly and enables its correlation with the SFT in a very wide dynamic range of 5 to 200,000 milliseconds. In this way, you can see how quickly a surfactant acts and after how much time the required SFT has been reached.

Reliable methods for checking the surfactant content

The dynamic SFT responds particularly sensitively to changes in the surfactant content of the solution. With the BP100, you can use this relationship and quickly find out whether the amount of surfactant lies within the required range, for example in galvanic or cleaning baths. The proven laboratory instrument provides methods for all steps of this quality process from the production of an accurate reference curve to rapid single-point measurement for checking surfactant content.



Checking surfactant content with a single-point measurement





GENEROUS WITH CONVENIENCE, ECONOMICAL WITH YOUR TIME

- **Automatic measuring programs and intuitive instrument control**
- **Fast preparation and flexible measurement with disposable capillaries**

TASKS AND APPLICATIONS

- Optimization of spray processes
- Surfactant development
- Development of washing and cleaning processes
- Optimization of painting and printing processes
- Checking the surfactant content in galvanic and cleaning baths

MEASURING METHODS AND OPTIONS

- Measurement of surface tension (SFT) as a function of surface age between 5 and 200,000 milliseconds
- Long-term measurement of SFT at constant surface
- Determination of the adsorption and diffusion coefficients
- Calculation of the SFT of the solvent and the equilibrium SFT
- Temperature control from -10 to 130 °C, temperature measurement with internal sensor

Simple operation and flexible adaption of the measuring conditions

The Bubble Pressure Tensiometer – BP100 impresses with its convenient operation – from the rapid capillary change and automatic surface detection to pre-prepared and flexibly adaptable fully automatic measuring programs. Helpful components, such as the motorized sample stage, the measuring chamber illumination and the integrated stirrer, are operated with the intuitive control panel.

The ability to control temperatures between -10 and 130 °C enables thermal process conditions to be simulated exactly. The software assigns the appropriate temperature measurement to each surface tension value thanks to the integral temperature sensor. The BP100 therefore provides information which can be transposed to large-scale situations.

Disposable capillaries save hydrophobic coating and cleaning

The option of using disposable capillaries thanks to the specially developed control electronics of the BP100 brings many advantages. It saves the hydrophobic coating and cleaning necessary with glass capillaries and therefore simplifies the analysis of contaminating or solidifying liquids such as inks or varnishes.

Transparent data management

With integral and flexibly adaptable measuring templates, our software reduces your preparation time to a minimum. Overview diagrams, comprehensive measuring reports and transparent data organization, right down to the combination of results measured with different types of tensiometer, make results easy to manage. You can also use the software's extensive and expandable substance database as a clearly organized data pool of the substances which are important to you.



ALWAYS CLOSE TO YOU

At KRÜSS, we combine technical know-how and scientific expertise with plenty of passion. That is why we not only produce high-quality measuring instruments for surface and interfacial chemistry – we offer a unique combination of product and scientific consulting. Our continuous know-how transfer ensures that not only we at KRÜSS keep pace with scientific developments, but also our customers.

In this way, we help you to optimize and make better use of your technologies. This has made us the global market leader in the field of surface and interfacial tension measurement. As a matter of course, we will gladly support you with further information as well. Feel free to ask us about publications, application cases, and helpful information about other KRÜSS products. We are always close to you.



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BUBBLE PRESSURE TENSIO METER – BP100

SPECIFICATIONS



Product group specifications**BP100****Pressure measurement**

Maximum pressure	3000 Pa
Precision	0.05 %
Accuracy	1.3 %
Measurement rate	20 kHz

Sample stage

Travel distance	>110 mm
Resolution	20 μ m
Travel speed	0.09 to 500 mm/min
Type of motor	brushless DC servo motor
Simple platform	optional
Thermostated jacket	70 mm (50 and 100 mm) ¹⁾

Software

LabDesk	bubble pressure
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Measurement specifications**BP100****Bubble pressure**

Result	dynamic surface tension vs. surface age	dynamic surface tension at constant surface age
Surface tension range	15 to 100 mN/m	
Resolution	0.01 mN/m	
Precision	1%	
Surface age range	5 to 200000 ms	

Adsorption/diffusion

Result	adsorption constant	diffusion constant
Models	Ward & Tordai	Joos & Rillaerts

¹⁾ optional

General specifications**BP100****Sample dimensions**

Minimum recommended sample volume	15 mL ²⁾
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Temperature control

Type	liquid
Range	-10 to 130 °C
External circulator	with liquid

Temperature measurement

Range	-10 to 130 °C
Resolution	0.01 °C
Precision	±0.05 °C
Accuracy	±0.5 °C
Internal sensor	sample stage ¹⁾
External sensor	sample vessel ¹⁾

Housing and peripherals

Built-in bubble level	yes
Glass windshield doors	yes
Stainless steel measuring compartment	yes
Control pad	yes

Environment

Temperature	operating: 15 to 30 °C storage: -10 to 70 °C
Humidity	without condensation

Instrument dimensions

Footprint	300 mm × 390 mm (W × D)
Height	585 mm
Weight (without accessories)	13 kg

Power

Voltage	100 to 240 V
Power consumption	40 W
Frequency	47 to 63 Hz 100 to 400 kPa ¹⁾

Interfaces

PC	USB 2.0
Auxiliary	RS232
Thermostat	quick lock fittings
Inert gas	quick lock fittings

²⁾ sample vessel SV23 recommended

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The KRÜSS logo features a blue curved line above the word 'KRÜSS' in a bold, blue, sans-serif font.

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