



# SURFTENS universal

High quality equipment for acquisition  
of measuring data for contact angle, surface free energy  
and surface tension (SFE)

## Precision for numerous applications

### Measuring tasks

The SURFTENS basic can be utilized for characterization of

- Cleaning processes
- Surface pretreatments
- Studies on the wettability of surfaces
- Characterization of roughness of the surface

### Measuring methods

- Static contact angle between liquid and solid
- Dynamic contact angle (advancing angle, receding angle)
- Calculating the surface free energy (SFE) from the contact angles of up to 5 test liquids
- Measuring the surface tension by the pendant drop method
- Acquisition of videos, subsequent analysis of recorded videos
- Measuring the Roll-off angle
- Tempered measurements up to 80°C

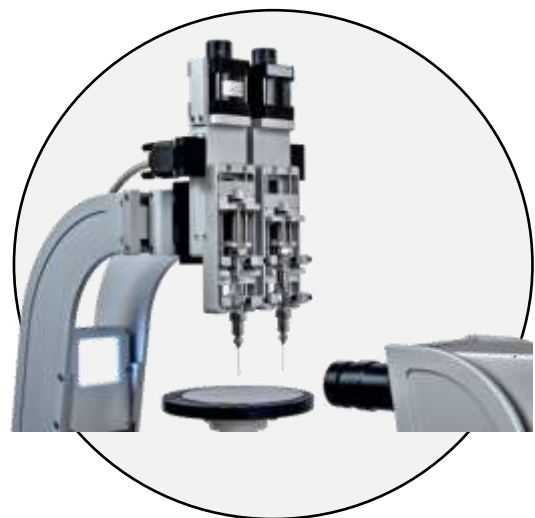


## Easy handling, accurate measurements – fully conform to German Industrial Norms (DIN)

All configurations of SURFTENS universal as well as all software versions are fully accordant to the German Industrial Norm DIN.

In the basic configuration SURFTENS universal comprises an adjustable manual lifting table, which allows the sensitive and rapid adaption of the measuring height according to different specimen thicknesses. Even the basic lifting table features a lateral pull-out, avoiding any contact of the needle with the specimen while the sample is placed. Additionally, the table is moveable transversely to the optical axis using a spindle in order to achieve the correct specimen positioning. Moreover, the height position (z-axis) of the dosing system can be adjusted.

Optionally the SURFTENS universal can be equipped with a double dosing unit to perform measurements of the surface free energy (SFE). Alternatives to the manual dosing units are motorized and software controlled dosing systems, enabling the precise automatic dosing as well as the accurate measurement of the advancing and receding angle. As standard measuring optic, even in the basis setup, a zoom lens is used. In connection with the uniform and bright LED lighting the drop is portrayed with an optimal quality, free of distortion and with the optimal magnification.





## **SURFTENS – Image processing software for accurate drop analysis**

SURFTENS universal is operated by the image processing software SURFTENS which allows precise measurement of contact angle and the calculation of the SFE. Furthermore SURFTENS offers functions like video recording, image storage, image labelling and creating measurement protocols. The recorded videos can be played back and analysed, whereby all measuring functions of SURFTENS are available to the video and to each single picture of the video. In case motorized compounds are equipped, the software version SURFTENS-M will provide a convenient and reliable control of those units.

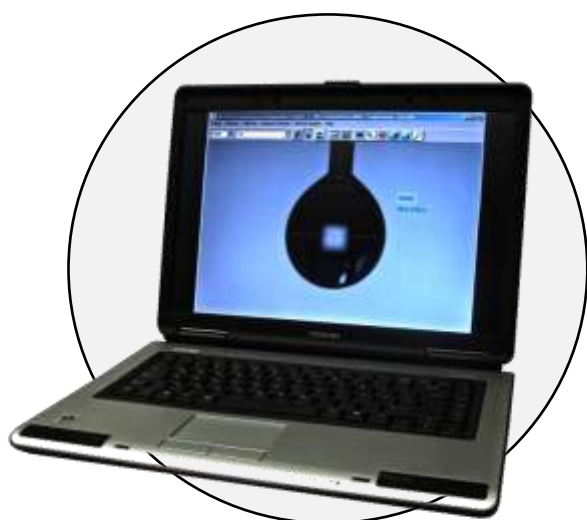
### **Tilting stage for measurement of dynamic contact angle and rolloff angle**

The optional manual tilting stage offers the possibility to do an exact analysis of drops on inclined surfaces. The whole measuring system can be inclined by the tilting stage in steps of 1° to a maximum tilt angle of 90. At the same time, the software measures the right and left side contact angle independent from each other.



### **Calculation of Surface free energy SFE**

For determination of the SFE contact angles of up to five different test liquids (e.g. water and diiodmethane) on the solid test specimen get analysed. From the obtained data the software calculates the SFE using the algorithms according to Wu or Owens-Wendt-Rabel-Kaelble (OWRK), respectively, as recommended by the DIN standard.



### **Measurement of surface tension of liquids**

The optional software module SURFTENS PD determines the surface tension of liquids by the pendant drop method. Using the PD-module the contours of pending drops can be measured. By approximating the theoretical drop profile to the measured one and taking the difference in densities between the phases as well as the gravity into account it is possible to calculate the surface tension of liquids.



## Technical Parameter

### Mechanical basic setup

- Dimensions (L x W x H): 900 x 400 x 600 mm
- Holder for several dosing systems
- lens holder with fixed viewing angle of 2°

### Measuring optics with C-mount adapter

- Video zoom factor 6,5x
- Magnification 0,35x - 2,25x
- Object field (12 x 8) mm - (1,8 x 1,2) mm
- WD about 100 mm

### B/W USB 2.0 Camera with USB 2.0 cable

- 1,3 Megapixel resolution, (1280 x 1024) Pixel
- Up to 25 fps with full resolution
- Up to 100 fps with reduced AOI

### LED Light Source, white

-power supply and brightness controller

### Specimen table

- Diameter 360°- round table 205 mm
- 30 mm travel in vertical direction
- Travel range: Y-axis 35 mm

### Manual dosing unit

- smallest drop volume: 0,2 µl
- dosing resolution / accuracy: 0,1 µl (water)
- Glass or disposable syringe with Luer-lock
- smallest drop volume: 0,2 µl

### Contact angle measuring data

- Resolution: 0,01°
- Reproducibility: +/-0,1° at the live video
- Accuracy: 0,1°

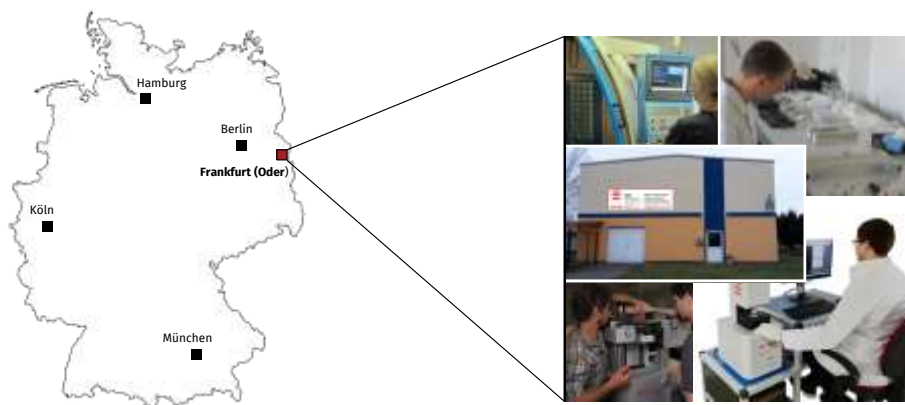
### Additional necessarily:

- PC or Laptop with USB 2.0 interface

## Mechanics, Optics, Software and Service from one hand

For 25 years OEG GmbH has been specialized in development and production of optical measuring equipment.

A key success factor of the company is the unification of the complete production process, beginning from conception, development of mechanics, software and electronics to mechanical production, assembly and calibration in our facilities. Thus, our high quality measuring instruments can be adapted fast and cost effective to meet our customer's special needs and demands. Besides of standard optional building groups customer specific modules can be developed upon request. Those convincing features led to a distribution of our equipment on all continents.



Please do not hesitate to contact us for a special offer!

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