

# MOBILE SURFACE ANALYZER – MSA



MOBILE MEASUREMENT  
OF SURFACE FREE ENERGY  
WITH ONLY ONE CLICK

**KRÜSS**

Advancing your Surface Science



## WE'RE SETTING NEW STANDARDS FOR QUALITY CONTROL WITH THE MOBILE MEASUREMENT OF SURFACE FREE ENERGY

- One-click measurement gets results in less than a second
- Quality control of pre-treated and coated surfaces
- Fully automated for easy handling
- Extra robust and as reliable as a lab instrument

The close contact that we keep with our customers and scientists inspires us to develop measuring solutions that are perfectly designed for versatile and demanding applications – in research and development as well as complex quality assurance. One of our results: the Mobile Surface Analyzer – MSA. This mobile instrument performs fast and reliable measurements of surface free energy (SFE) and contact angles on solid surfaces.

### **“One-Click SFE” – our innovative technology for fast and reliable measurements**

Our MSA measures the wettability of a sample based on contact angles. To determine the surface free energy of a solid surface, two test liquids are used – one polar (usually water) and one nonpolar (usually diiodomethane). With one click, both liquids are fully automatically dosed and all contact angles are simultaneously analyzed. This “One-Click SFE” determination allows well-founded statements about wettability by aqueous or organic liquids, for example for coating processes.

### **Perfect for your quality control**

We have developed the Mobile Surface Analyzer – MSA to support you with reliable and scientific measurements in your quality assurance process. In contrast to test inks or other conventional measuring methods, the SFE analysis is the only method that reveals both the polar and the nonpolar component of a solid's surface tension. Hence, knowing the polar and nonpolar components for your liquids (such as adhesives, inks, or paints) as well as your solid materials you can achieve optimal wetting conditions.

Determining the SFE used to require multiple steps like exchanging syringes and sequential contact angle measurements. Due to the time effort, it has always been a huge challenge to apply SFE measurements in the quality control of production processes. Not anymore!

Our MSA doses two parallel drops with one click, followed by the direct analysis of the contact angles and the derived results of the surface free energy. All steps are automated and happen within a second, making the MSA a perfect quality control instrument.





## A MOBILE AND ROBUST DESIGN FOR ROUGH ENVIRONMENTS

- **Ideal for mobile and non-destructive quality control**
- **Designed to reduce human errors**
- **Works on vertical, overhead and curved samples**

The software-controlled Mobile Surface Analyzer – MSA is used with a notebook via simple USB power connection. With its low weight and small footprint the MSA is ideal for mobile and non-destructive quality control. The handy instrument measures samples of any size, such as automobile parts. It provides reliable results even for vertical, overhead and slightly convex samples.

Both the housing and interior structure of the MSA are made of solid high quality aluminum. The stiff structure reduces vibrations and achieves optimal accuracy for the optical analysis. It enables the instrument also to be used in rough environments, like production processes.

### **Easy to handle and made to minimize human errors**

When designing the MSA, we have put great emphasis on simple and fast operation. The two test liquids for the automatic SFE measurement are filled into the cartridges of our newly designed double dosing system. Fully charged, the small instrument is capable of dosing 2,000 droplets. The cartridges can be refilled outside the instrument without effort.

Furthermore, we have focused on high accuracy and good repeatability of scientific results. By reducing the human influence better accuracy is achieved. The handy instrument is so easy to operate that application errors are hardly possible. It is simply placed on

the surface and carries out the whole analysis with one push of a button. This innovative MSA technology has led us to three patents.

### **Innovative contactless dosing for less impact on the sample**

Our newly developed double dosing system pressurizes the liquid reservoirs. By opening the valves at the perfect time, the droplets are dosed with very precise volume and minimal kinetic energy. Despite its high speed, the procedure resembles the gentle way of placing a drop with a dosing needle. The advantage of the MSA is that we use no needles and avoid unwanted contact with the sample and possible contamination or damage.

### **Optional syringe dosing for liquids with extensive cleaning effort**

For liquids requiring extensive cleaning efforts, such as adhesives, inks or paints, we have developed an alternative dosing solution. The double dosing system can be exchanged very quickly with a conventional, automatic syringe module. The syringe dosing system uses disposable syringes.





## TASKS AND APPLICATIONS

- Measurement on large workpieces and finished products such as automobile parts
- Determination of the wettability of solid materials before coating or bonding
- Quality assurance of pre-treatment and coating processes
- Quality assurance of cleaning steps
- Testing the effectiveness of hydrophobic coatings

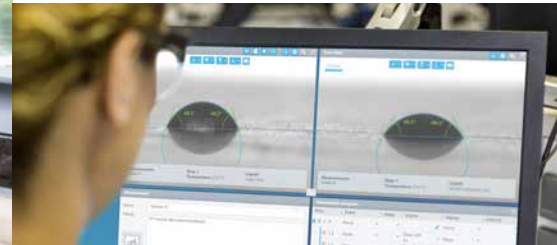
## MEASURING METHODS

- Measurement of contact angles
- Calculation of surface free energy according to Owens-Wendt-Rabel-Kaelble, Wu, Zisman and Fowkes

## ADVANCE – OUR NEW INTUITIVE SOFTWARE

- **Simple measurement sequence**
- **Easy to operate with a notebook**
- **Calculations based on proven scientific models**

The Mobile Surface Analyzer – MSA is optimally suitable for being operated with a notebook. Our modern and intuitive software ADVANCE – Drop Shape automatically calculates the SFE based on proven and meaningful scientific models. The software, for example, provides precise information about the polarity of the surface. Hence, it gives a reliable indication of the activation by methods such as plasma treatment. Due to the simple measuring sequence and the software's clear user guidance, measurement errors and incorrect operation are virtually ruled out.





WHO CAN MEASURE  
SURFACE FREE ENERGY  
WITH ONLY ONE CLICK  
IN LESS THAN A SECOND?  
WE CAN. AT KRÜSS.

# 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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