## The C+K Multi Probe Adapter System and its Advantages

The Multi Probe Adapter System is modular. It consists of a basic device and the probes.

- The user chooses a basic device meeting his requirements. The probes are digital containing all calibration data. Therefore they can be connected to any of them.
- The probes provide a high degree of flexibility and stability and can be easily serviced.
- The MPA system is operated with an overall C+K software.
- With a check calibration function the accuracy of the probes can be verified any time.
- Room temperature and rel. humidity from the sensor RTH 100 are saved with the measurements.
- All future C+K probes will be compatible with this system.

## Which Probes Can Be Connected?

The following probes for non-invasive measurements are currently available

- **Corneometer® CM 825** *Moisture*
- **Sebumeter® SM 815** *Sebum*
- **Skin-pH-Meter PH 905** *pH*
- **Mexameter® MX 18** *Melanin / Erythema*
- **Skin Colorimeter CL 400** *Colour*
- **Tewameter® TM 300** *Transepidermal*
- **Tewameter® triple TM 330T** *Waterloss (TEWL)*
- **Invitro Tewameter® VT 310** *TEWL in vitro*
- **Glossymeter GL 200** *Gloss*
- **Frictiometer® FR 700** *Friction Resistance*
- **Skin-Thermo-Meter ST 500** *Temperature*
- **Cutometer® 580** *Viscoelasticity*

*to be operated with the MPA 580 only*

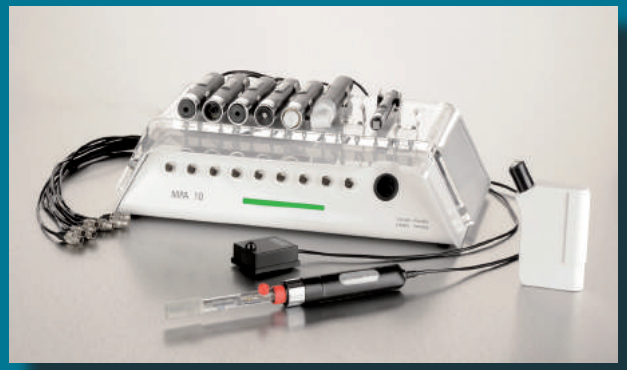
- **RTH 100** *Ambient condition sensor*

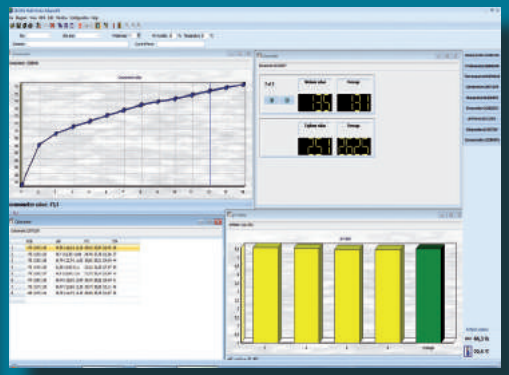
## The Software

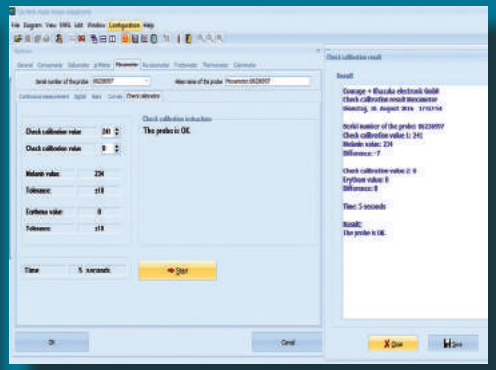
A user-friendly software operates all probes together. Only the Cutometer® requires a software of its own.

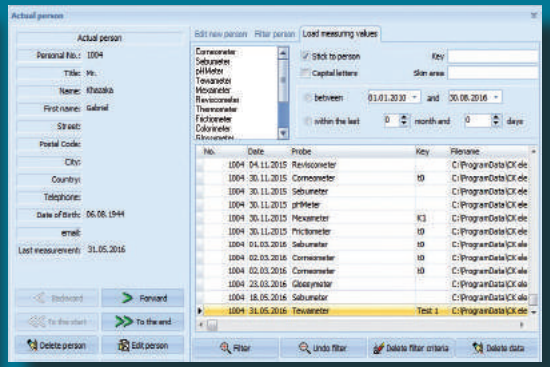
- Measuring values can be displayed as bars, curves or numerical data
- Standard deviation and average values of the measurements are calculated
- All data are saved in one database and can easily be selected according to date, name, skin site or entry. This makes it easy to collect data from different sessions of a study.
- The data can be exported to spreadsheets (Microsoft Excel®) for further evaluation

There is also the possibility of programming an individual software for the special devices MPA 6P or MPA 10P (not running with C+K software).









***Technical Data for the Basic Devices (without Probes)***

*MPA 6: Dimensions: 27.0 x 14.5 x 7.6 cm; Weight: 1.6 kg MPA 10: Dimensions: 39.0 x 22.5 x 7.6 cm; Weight: 3.1 kg*
*Cutometer® dual MPA 580: Dimensions: 39.0 x 22.5 x 7.6 cm; Weight: 3.9 kg*
*Interface: USB 2.0 type B connector; Power supply: ext.100-240 VAC, 47-63 Hz, DC 12V/4A*
*Computer: Windows® 7, 8 or 10, performance must meet system requirements, USB 2.0; 3.0*
*Technical changes may be made without prior notice.*

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## Which Basic Devices are Available?

### Multi Probe Adapter MPA 6

- Connection of five probes (same or different)
- Inbuilt Sebumeter® tube
- Operation with C+K MPA software

### Multi Probe Adapter MPA 10

- Connection of nine probes (same or different)
- Inbuilt Sebumeter® tube
- Operation with C+K MPA software

### Cutometer® dual MPA 580

- Connection of two Cutometer® probes (with different opening diameters)
- Connection of four additional C+K standard probes
- Inbuilt Sebumeter® tube
- Operation with C+K MPA software (standard probes) and C+K Cutometer® dual MPA 580 software

### Multi Probe Adapter MPA 2

- Small, USB powered
- Connection of up to two probes
- Operation with C+K MPA software

### Multi Display Device MDD 4

- Stand-alone device with one probe & ambient condition sensor
- Possibility of connecting two additional probes
- Large graphic colour display for showing results
- Functions are operated on the display by the turning knob
- Optional possibility of operation with MPA software

## Fields of Application

- R&D departments of the cosmetic, raw material, personal care companies, for development of household products (e.g. detergents) and the pharmaceutical industry
- Testing laboratories for efficacy testing and claim support
- All kinds of scientific studies as well as field tests
- Research of different materials (e.g. food, tissues)




***Technical Data for the Basic Devices (without Probes)***

*MDD 4: Dimensions: 14 x 27.7 x 9 cm; Display: 9.6 x 5.7 cm; Weight: 1.4 kg; Interface: USB*
*Power supply: external 100-240 VAC, 47-63 Hz, DC 12V/4A*
*MPA 2: Dimensions: 7 x 7.5 x 6 cm; Weight: 260 g ; Interface & Power supply: USB*
*Computer: Windows® 7, 8 or 10, performance must meet system requirements, USB 2.0, 3.0*
*Technical changes may be made without prior notice.*

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## What Does It Measure?

The Corneometer® CM 825 is the most used instrument worldwide to determine the hydration level of the skin surface, mainly the stratum corneum.

## The Measuring Principle

The measurement is based on capacitance measurement of a dielectric medium. The Corneometer® CM 825 measures the change in the dielectric constant due to skin surface hydration changing the capacitance of a precision capacitor.

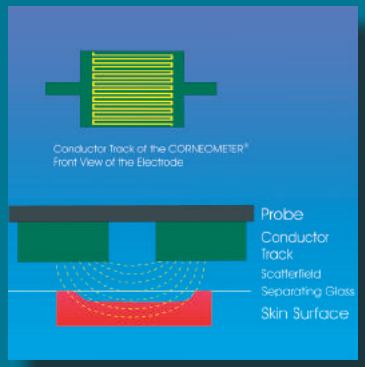
## Fields of Application

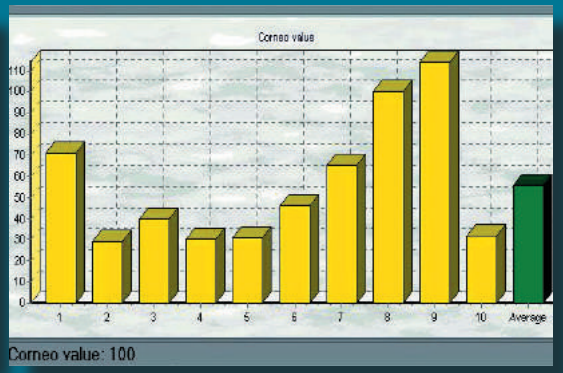
The hydration measurement is the basic measurement for all applications in basic research and cosmetics.

- Ideal instrument for formulation, claim support and efficacy testing of moisturizers.
- It is used for objective clinical trials and their monitoring.
- It gives information on the course of cosmetic treatments.
- Demonstrative to alert people to specific occupational skin hazards.

## Advantages

- Substances on the skin (e.g. salts or residues of topical applied products) have only minimal influence due to capacitance measurement.
- The modern, high quality electronics of the probe allow a very quick measurement (1 s).
- The measurement depth is very small (10-20 µm of the Stratum corneum) to avoid the influence of water in deeper skin layers.
- The probe is small and lightweight for easy handling and measurement on all body sites.
- The spring in the probe head ensures constant pressure on the skin, enabling exact, reproducible measurements which do not influence the skin.
- Worldwide established as „corneometry" with a broad range of studies.
- Even used for the SKIN-B project on the ISS in space.*
- Available for C+K MPA-System, as stand-alone device and wireless probe.




***Technical Data***

*Dimensions: 11 cm, Measuring surface: 49 mm², Weight: 41 g; Units: arbitrary Corneometer® units 0-120, Measurement principle: capacitance, Measurement frequency: 0.9-1.2 MHz, Measurement uncertainty: ± 3% Technical changes may be made without prior notice.*

** Study by DermaTronnier, instruments verified for space by Kayser-Threde GmbH on behalf of the DLR space travel management.*

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## What Does It Measure?

The Sebumeter® SM 815 is a worldwide acknowleged tool to measure sebum (oil) on skin, scalp and hair.

## The Measuring Principle

The measurement is based on grease spot photometry. The tape of the Sebumeter® SM 815 is brought into contact with skin or hair. It becomes transparent in relation to the sebum on the surface of the measurement area. Then the tape is inserted into the aperture of the device and the transparency is measured by a photocell. The light transmission represents the sebum content.

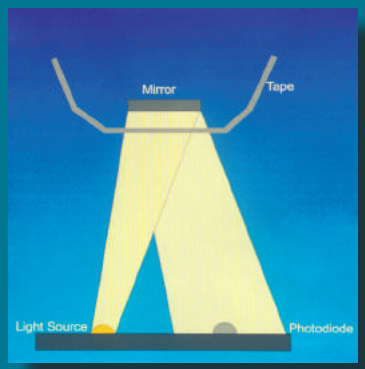
## Fields of Application

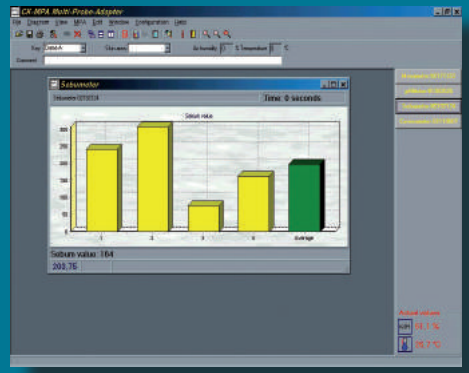
There are many fields of application where the sebum content plays a major role.

- Important for dermatologic basic research.
- It is used for objective clinical studies and the monitoring of the course of skin changes.
- For claim support and efficacy testing of all kinds of cosmetic and other products (especially cleansers, anti-acne products, shampoos and hair care, products for oily skin).

## Advantages

- The special foil detects only oil and is not influenced by moisture.
- A spring in the measuring head provides constant pressure on the skin.
- Its low weight ensures easy handling.
- One cartridge lasts for approx. 400 measurements.
- The accuracy can easily be checked with a test cartridge at any time.
- Hundreds of studies have been done with the Sebumeter®.
- Available in the C+K MPA-Systems and as stand-alone device.




***Technical Data***

*Dimensions: 8.5 x 11.3 x 2.3 cm; Measuring surface: 64 mm²; Weight: 65 g;*

*Units: Sebumeter® units from 0-350 (approximated to µg/cm² in a certain range), Measurement uncertainty: ± 5%*

*One cartridge lasts for approx. 400 measurements. Exhausted cartridges need replacement.*

*Technical changes may be made without prior notice.*

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## What Does It Measure?

The Skin-pH-Meter PH 905 is a quick, easy and economical tool to specifically measure the pH on the skin surface or the scalp.

## The Measuring Principle

The measurement is based on a high quality combined electrode, where both $H^+$ ion sensitive electrode and additional reference electrode are placed in one glass housing. It is connected to a probe handle containing the measurement electronics.

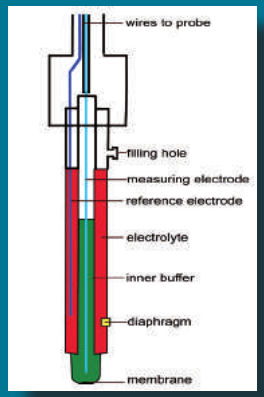
## Fields of Application

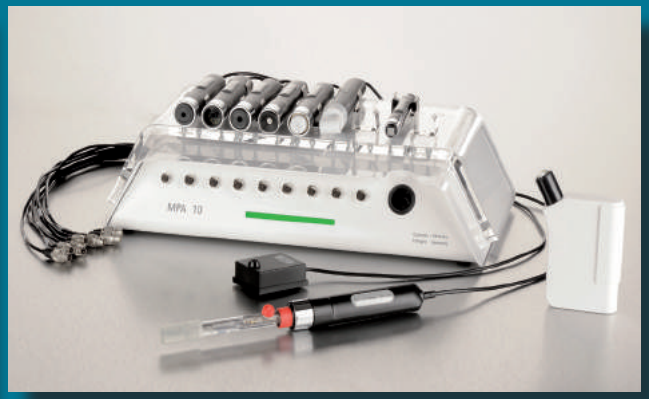
There are many fields of application where changes in skin pH are of interest.

- In cosmetological application fields for the development of specific products.
- The role of the pH has gained importance in skin health and is therefore subject to basic research.
- Studies on the changes in the microbiotic environment on skin and scalp.
- For educating on skin health and suitable products in occupational health.

## Advantages

- The modern, high quality electronics of the probe allow a very quick and reliable measurement avoiding occlusion effects.
- The probe head is planar for measuring on the skin surface.
- Single and continuous measurement possible.
- Regular calibration can be done by the user.
- Available for C+K MPA-System, as stand-alone device and wireless probe.



***Technical Data***

*Dimensions: 22.8 cm, Measuring surface: Ø 1 cm flat; Weight: 130 g*
*Measurement range: pH 1 to pH 11, Measurement uncertainty: ± pH 0.1*
*Technical changes may be made without prior notice.*

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## What Does It Measure?

The Mexameter® MX 18 is a quick, easy and economical tool to measure the two components mainly responsible for the colour of skin: melanin and haemoglobin (erythema).

## The Measuring Principle

The measurement is based on absorption/ reflection.
The Mexameter® MX 18 emits 3 specific wavelengths. As the quantity of emitted light is defined, the quantity of light absorbed by the skin can be calculated.

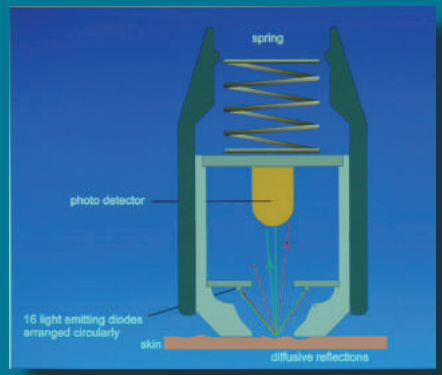
## Fields of Application

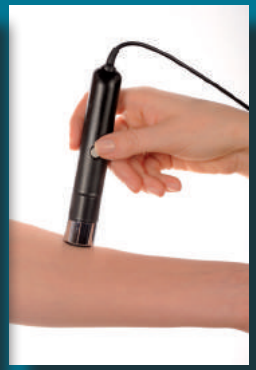
There are many fields of application where changes in the skin colour are of interest.

- Many international scientific studies demonstrate its benefits in important skin related and cosmetological application fields.
- It is indispensable in efficacy testing and claim support for cosmetics and other products (especially sunscreen and skin whitening products).
- Assessment of skin soothing products.
- In occupational health the skin irritation (erythema) is of special interest to educate the necessity of protection schemes.

## Advantages

- The modern, high quality electronics of the probe allow a very quick measurement.
- It is very sensitive to the slightest skin colour changes.
- A spring in the measuring head provides a very low constant pressure on the skin.
- Its low weight ensures easy handling.
- Available for C+K MPA-System, as stand-alone device and wireless probe.



***Technical Data***
*Dimensions: 13 cm x Ø 2.4 cm; Measuring surface: Ø 5 mm ≈ 19.6 mm²; Probe cable: 1.3 m*
*Weight: 85 g incl. cable*
*Wavelengths: 3 colour measuring system green: λ = 568 nm, red: λ = 660 nm, infrared: λ = 870 nm*
*Units: arbitrary Mexameter® units (0-999), Measurement uncertainty: ± 5%*
*Technical changes may be made without prior notice.*

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## What Does It Measure?

The Cutometer® MPA 580 is worldwide acknowledged as standard device to measure elasticity and other biomechanical parameters of the skin. The Multiprobe Adaptor layout allows to connect up to four probes additionally to two Cutometer® probes. A Sebumeter® is also built in.

## The Measuring Principle

The measurement is based on suction. Negative pressure is created in the device drawing the skin into the aperture of the probe. Inside the probe the penetration depth is determined by a non-contact optical measuring system consisting of a light source and a light receptor, as well as two prisms facing each other, which project the light from transmitter to receptor. The light intensity varies due to the penetration depth of the skin.
The resistance of the skin to be sucked up by negative pressure (firmness) and its ability to return into its original position (elasticity) are displayed as curves in real time.

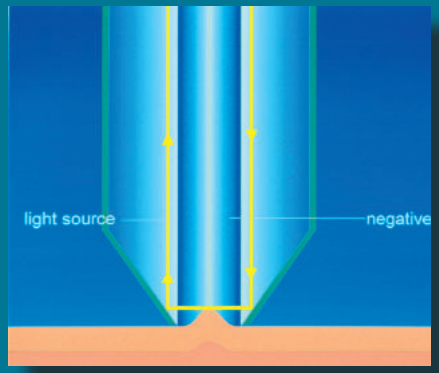
## Fields of Application

The measurement with the Cutometer® is used as standard in anti-ageing research and cosmetology.

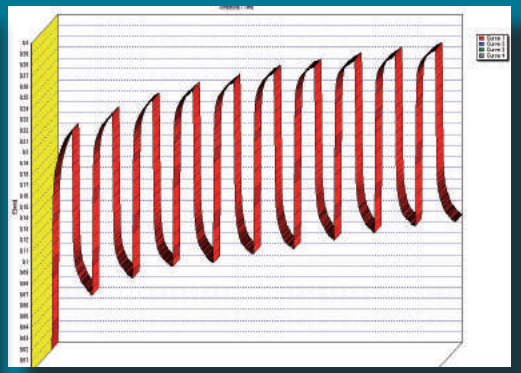
- It is indispensable for formulation, efficacy testing and claim support for all kinds of cosmetic products (esp. anti-ageing products, firmness enhancing & anti-cellulite products).
- Basic research of mechanical properties of the skin and skin ageing.
- Other materials like food or textiles can also be assessed.

## Advantages

- Several probe aperture sizes for various skin sites and study requirements (e.g. different skin thickness, scars) are available.
- Two probes with different aperture sizes can be connected at the same time.
- A spring in the measuring head provides constant pressure on the skin.
- The low weight of the probe ensures easy handling.
- A multitude of elasticity related parameters can be calculated from the curves.
- The settings in the programme are very flexible and can be selected by the user according to different applications.
- All data of the curves can be transferred to spreadsheets (Microsoft Excel®) for further individual evaluation (up to four curves per sheet).
- Available solely as C+K MPA -System.







***Technical Data***
*Dimensions: Device: 39,0 x 22.5 x 7.6 cm, Probe: 10.7 cm x Ø 2.4 cm, Aperture: Ø 2 mm standard, (4, 6 or 8 mm on request); Weight: Device: 3.9 kg, Probe:165 g incl. air tube; Power supply: ext.100-240 VAC, 47-63 Hz, DC 12V/4A*
*Units: µm penetration depth into the probe opening, expressed as curves*
*Technical changes may be made without prior notice.*

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## Software & Parameters

The software of the Cutometer® dual MPA 580 allows to calculate a lot of interesting parameters. Here a short overview:

## R-Parameters

- R 0: This parameter represents the passive behaviour of the skin to force (firmness).
- R 1: The ability of the skin to return to its original state.
- R 2: Gross elasticity, the higher the value the more elastic the curve, very important parameter.
- R 3/R 4: Maximum/minimum amplitude of the last suction curve after repeated suction. „Tiring effects“ of the skin are visible, as the amplitude increases/decreases with each new suction.
- R 5: Net elasticity, the higher the value, the more elastic is the skin.
- R 6: Portion of the visco-elasticity on the elastic part of the curve. The smaller the value the higher the distensibility of the elastine fibres.
- R 7: Portion of the elasticity compared to the complete curve, the higher the value, the more elastic the skin.
- R 8: Skin recovery, the closer the value is to R 0, the better is the ability of the skin to return to its original state.
- R 9: Represents tiring effects of the skin after repeated suction and release of the skin. The smaller R 9, the smaller the tiring effects.

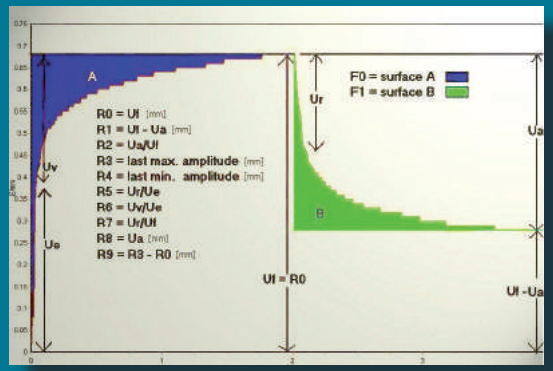
## F-Parameters

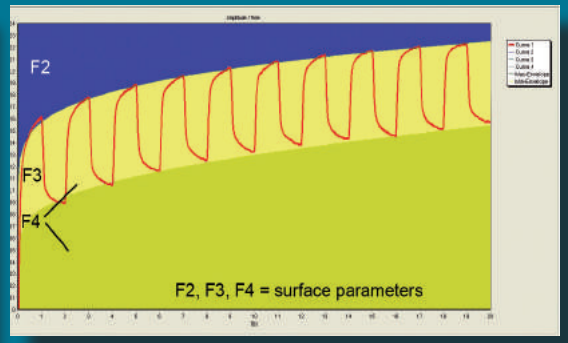
- F 0/F 1 = Area within the rectangle (Uf x suction time) above the curve/ within the rectangle (Uf x relaxation time) underneath the curve.
- F 2 = Area above the upper envelope-curve of 10-times repetition of the measuring cycle.
- The smaller F 0, F 1 and F 2, the more elastic the skin. A completely elastic material will show no area at all. The closer the value to 0, the more elastic.
- F 3: Area within the enveloped curve, represents the skin fatigue.
- F 4: Area beneath the enveloped curve, represents the firmness of the skin (resistance to the suction).

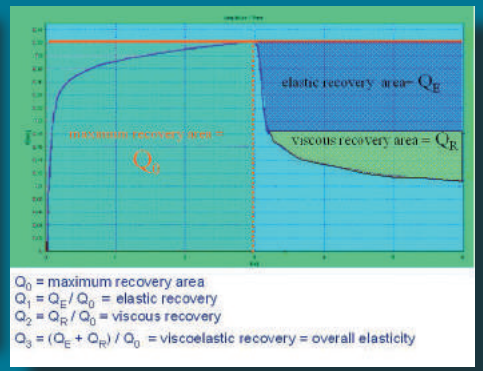
## Q-Parameters

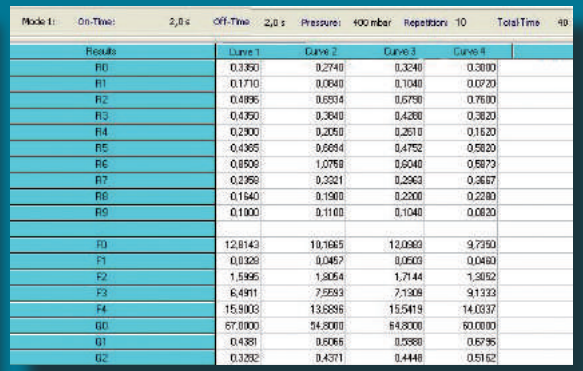
A set of parameters developed by the scientist Di Qu* has been added, showing interesting correlations between skin age and the elastic and viscous recovery of the curves.

- Q 0: Maximum recovery area
- Q 1: Overall elasticity
- Q 2: Elastic recovery
- Q 3: Viscoelastic recovery



| Mode 1: | On-Time: 2,0 s | Off-Time: 2,0 s | Pressure: 400 mbar | Repetitions: 10 | Total Time: 40 |
|---|---|---|---|---|---|
| Results | Curve 1 | Curve 2 | Curve 3 | Curve 4 | |
| R0 | 0,3350 | 0,2740 | 0,3240 | 0,3000 | |
| R1 | 0,1710 | 0,0640 | 0,1040 | 0,0720 | |
| R2 | 0,4895 | 0,6934 | 0,6758 | 0,7600 | |
| R3 | 0,4350 | 0,3640 | 0,4268 | 0,3820 | |
| R4 | 0,2900 | 0,2050 | 0,2510 | 0,1620 | |
| R5 | 0,4365 | 0,6694 | 0,4752 | 0,5820 | |
| R6 | 0,8509 | 1,0768 | 0,8040 | 0,5873 | |
| R7 | 0,2959 | 0,3321 | 0,2963 | 0,3697 | |
| R8 | 0,1640 | 0,1900 | 0,2200 | 0,2280 | |
| R9 | 0,1000 | 0,1100 | 0,1040 | 0,0820 | |
| | | | | | |
| F0 | 12,8143 | 10,1685 | 12,0369 | 9,7350 | |
| F1 | 0,0329 | 0,0457 | 0,0503 | 0,0490 | |
| F2 | 1,5995 | 1,3054 | 1,7144 | 1,3052 | |
| F3 | 6,4911 | 7,9593 | 7,1909 | 9,1333 | |
| F4 | 15,9003 | 13,8886 | 15,5419 | 14,0337 | |
| Q0 | 57,0000 | 54,8000 | 54,8000 | 60,0000 | |
| Q1 | 0,4381 | 0,6066 | 0,5988 | 0,6795 | |
| Q2 | 0,3282 | 0,4371 | 0,4448 | 0,5162 | |

***Technical Data***

*Computer: Windows® 7, 8 or 10, performance must meet system requirements, USB 2.0*

*Technical changes may be made without prior notice.*

**Di Qu, Senior Research Scientist, R&D Skin Care, Amway Corporation, Ada, Michigan, USA*

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## What Does It Measure?

The Tewameter® TM 300 is the worldwide most accepted measuring device for the assessment of the Trans-Epidermal WaterLoss (TEWL). This is the most important parameter for the evaluation of the barrier function of the skin.

## The Measuring Principle

The Tewameter® probe measures the density gradient of the water evaporation from the skin indirectly by the two pairs of sensors (temperature and relative humidity) inside the hollow cylinder. This is an open chamber measurement. A microprocessor analyses the values.

$$\frac{dm}{dt} = - D \bullet A \bullet \frac{dp}{dx}$$

A = surface [m²]
m = water transported [g]
t = time [h]
D = diffusion constant [= 0.0877 g/m(h(mmHg))]
p = vapour pressure of the atmosphere [mm Hg]
x = distance from skin surface to point of measurement [m]

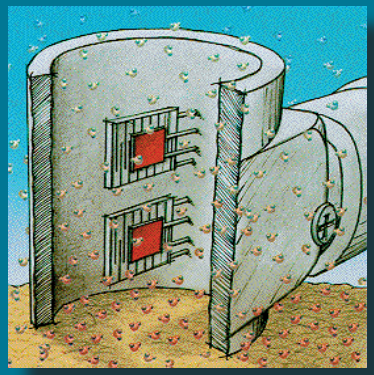
## Fields of Application

There is a wide field of applications for detecting even slight deficiencies in the barrier of the skin.

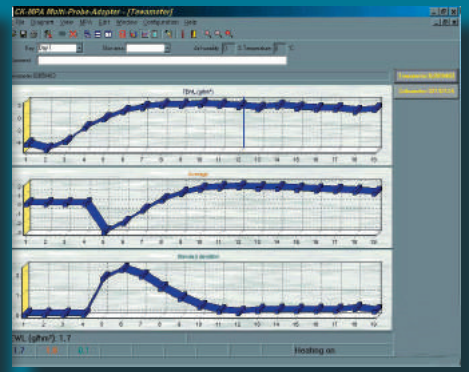
- Indispensable in efficacy testing and claim support for cosmetics and pharmaceuticals.
- Dermatological basic research.
- Objective clinical trials of barrier improvement and mechanisms of product behaviour.
- Sweat studies (anti-perspirant efficacy testing).
- Demonstrative to alert people to specific occupational skin hazards.
- Interesting applications in veterinary dermatology and zoology.
- Also for the textile, food or paper/tissue industry the measurement is of interest.

## Advantages

- The open chamber measurement is the only method to assess the TEWL continuously, which is necessary for most applications without influencing the skin surface.
- Numerous studies available.
- A stable measurement is achieved quickly, the next measurement can be done without waiting time.
- The small size of the probe head minimizes the influence of air turbulence inside the probe.
- Its low weight has no influence on the skin structure and ensures easy handling.
- Check calibration can easily be done by a small chamber at any time.
- Available for C+K MPA-System, as stand-alone device and wireless probe.







***Technical Data***
*Dim.: Hollow cylinder: 2 cm, ∅ 1 cm, Probe: 15.3 cm, Weight: 90 g, Resolution: Humidity: ± 0.01 % RH, Temp.: ± 0.01 °C, Measurement uncertainty: within 10° C to 40° C and for TEWL-values lower than 70 g/hm²:*
*rel. humidity (RH): ± 1.5 % RH in the range of 30 % RH to 90 % RH; ± 2.5 % RH in the range of 90 % RH to 100 % RH; ± 2.5 % RH in the range of 0 % RH to 30 % RH*
*Waterloss: ± 0.5 g/hm² for RH ≥ 30 %; ± 1.0 g/hm² for RH ≤ 30 % , Temperature: ± 0.5 °C*
*Technical changes may be made without prior notice.*

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## Special Features

- Offset of probe by the user possible for compensation of “aging effects“ of the sensor.
- Measurement with several probes at the same time possible (e.g. for the measurement of large areas or sweat studies).
- Recording of the ambient conditions with the Ambient Condition Sensor RHT 100 to help to compare measurements taken at different times.
- Special calculations i.e. SSWL (Skin Surface Water Loss - assessment of skin‘s water holding capacity after occlusion) are possible.
- Even used for the SKIN-B project on the ISS in space (Study by DermaTronnier, instruments verified for space by Kayser-Threde GmbH on behalf of the DLR space travel management).

## Probe Heater PR 100

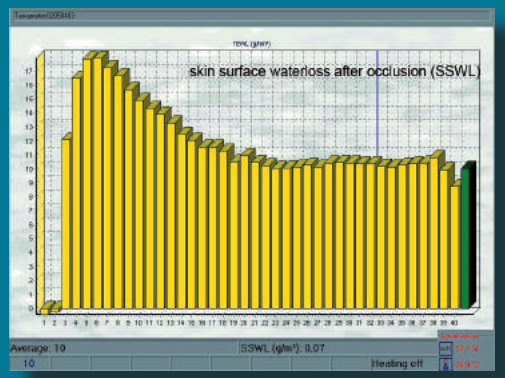
To measure the TEWL precisely in a short time, the probe needs to be heated to the same temperature level as the skin. The Probe Heater PR100 warms the probe up to the temperature range of 28-32°C.

## Special Rings & Caps

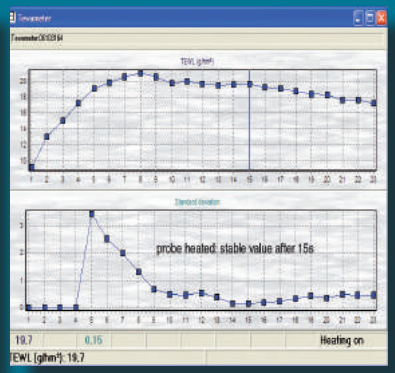
- Sterilizable rings for the Tewameter® -probe head allow measurement on special sensitive surfaces
- Special caps with smaller opening are available for different applications e.g. measurement on small animals

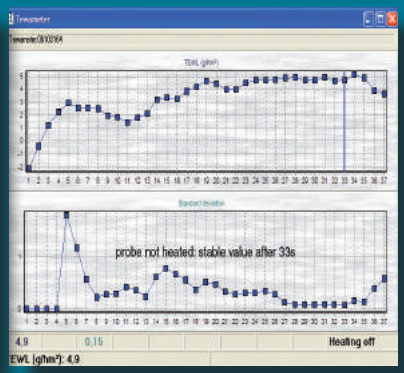
## Ambient Condition Sensor RTH 100

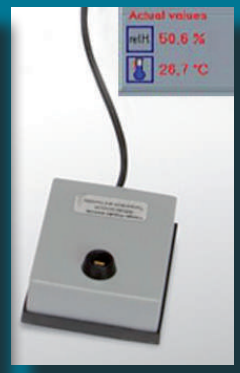
- The room condition sensor measures room temperature and relative humidity. These values are stored in the software together with the measurement results.
- Important for measurement of TEWL as well as for many other parameters. TEWL, moisture, sebum, skin colour, gloss etc. will largely be influenced by transpiration.
- Indispensable for subsequent evaluation and comparison of measurement data
- Available for the C+K MPA-System and for the stand-alone devices.








***Technical Data***

*Probe Heater PR 100: Power supply: external, 12 VDC, 4 A; Dimensions: 10 x 11 x 10.5 cm Weight: 470 g*
*Ambient Condition Sensor RTH 100: Dimensions: 4.7 x 1,9 x 5 cm; Weight: 50 g;*
*Measurement uncertainty: r.H. ± 2% , T ± 0.9°C*
*Technical changes may be made without prior notice.*

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## Introduction

The measurement of the TransEpidermal WaterLoss is the most important parameter to assess the skin barrier function. The required measuring time is longer in relation to the measurement of other skin parameters due to the fact that the water quantity to be measured is extremely small. The Tewameter® triple TM 330T is a very suitable device to reduce the measuring time as it supplies three measurements at the same time. It is also ideal for simultaneous measurement on three skin sites.

## The Measuring Principle

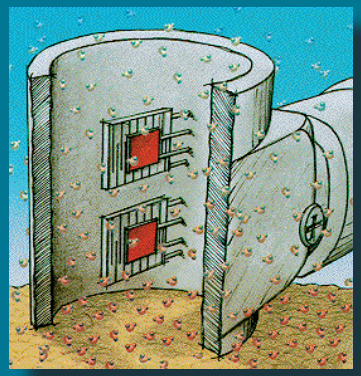
The Tewameter® triple TM 330T probe follows the same principle as the worldwide acknowledged Tewameter® TM 300. It measures the density gradient of the water evaporation from the skin indirectly by the two pairs of sensors (temperature and relative humidity) inside the hollow cylinder. This is an open chamber measurement. A microprocessor analyses the values.

## Fields of Application

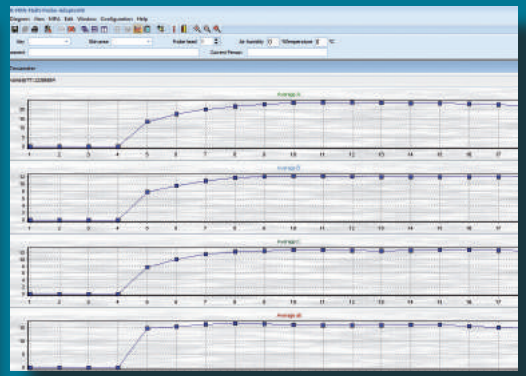
- Transepidermal waterloss is a basic measurement of the skin for many application purposes.
- The TM 330T is ideal for multicentric investigations and sweat studies.

## Advantages

- The open chamber measurement is the only method to assess the TEWL continuously, which is necessary for most applications without influencing the skin surface. Numerous studies available.
- Possibility of measurement of one large area with higher precision and reproducibility
- or on three areas with different products at the same time
- Software shows the values of all three probe heads at the same time. The values can be viewed as single values or as average.
- The probe heads can easily be adjusted with high flexibility.
- New sensor technology for precise and very stable measurements.
- Check calibration can be done with the supplied functional case which can also be used to house the probe when not in use.
- Very time saving as three values can be taken under the exact ambient conditions at the same time.
- Available for C+K MPA-System.







***Technical Data***

*Dim.: 3 measuring chambers: 2 cm, ◘ 1 cm, Probe: length 24 cm, minimum width 6.4 cm, Weight: 120 g, Cable length 1.3 m, Resolution: Humidity: ± 0.01 % RH, Temp.: ± 0.01 °C, TEWL: 0.1 g/h/m²*
*Measurement uncertainty: rel. humidity (RH): ± 1.8 %, Temperature: ± 0.2 °C*
*Waterloss: 10% - 80% RH: ± 0.25 g/h/m² for TEWL values ≤5 g/h/m² and 5% for values > 5g/h/m²*
*0-10 % and > 80% RH: ± 1 g/h/m² for TEWL values ≤5 g/h/m² and 10% for values > 5g/h/m²*
*Technical changes may be made without prior notice.*

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## Introduction

With the Invitro Tewameter® VT 310 a probe for the measurement of the TransEpidermal WaterLoss is available, which offers all benefits of the Tewameter® and is perfectly suited to fit on a Franz cell.

## The Measuring Principle

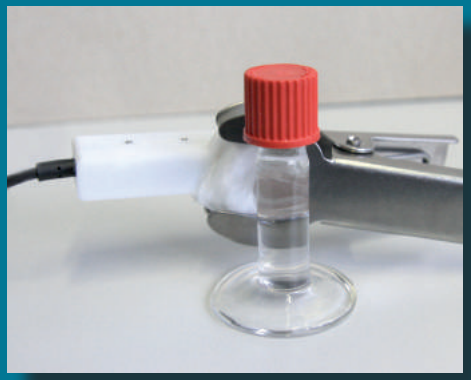
The probe emulates completely the upper part (donor chamber) of a Franz cell (standard is 15 mm Ø, other sizes on request). Thus the probes fits exactly on the membrane of the Franz cell as it would on skin directly without needing further adapters.
The measured TEWL-value is expressed in g/h/m², the worldwide acknowledged absolute measuring value for skin.

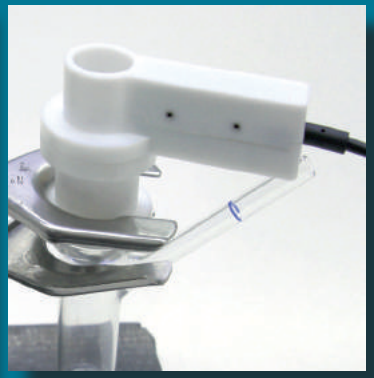
## Fields of Application

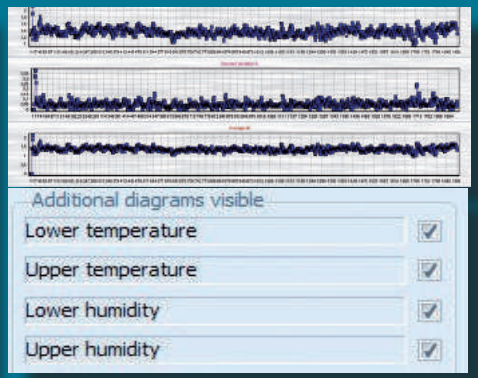
- Inexpensive pre-screening before in vivo tests (no ethic commission, no expensive volunteers).
- Only way to study skin permeability and dermal absorption necessary for safety and efficacy testing.
- In vitro tests are established in several worldwide acknowledged guidelines: WHO, SCCS and OECD.

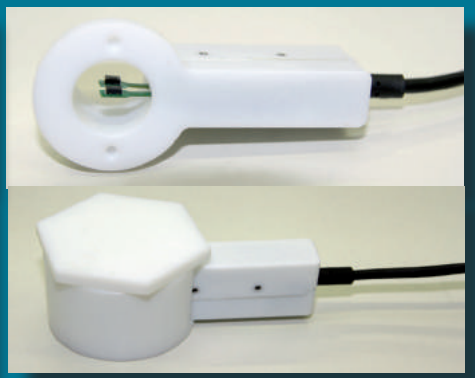
## Advantages

- It offers all advantages of the open chamber measurement of the Tewameter®, the worldwide most used TEWL-measuring device.
- Fully comparable to in vivo measurements as the results are expressed in g/h/m².
- Standard probe for Franz cells of 15 mm Ø, other sizes can be custom made.
- Up to 10 probes can measure simultaneously.
- If preparations are applied to the membrane during the measurement, a special high quality Teflon centerpiece emulating the donor chamber can be put between probe and membrane. The probe fits exactly to the centerpiece without further adapters.
- Continuous measurements over long periods possible
- During the measurement all TEWL values, averages and the standard deviations as well as the information on temperature and relative humidity of the two sensor pairs in the probe can be recorded and displayed.
- With the open chamber measurement even higher waterloss values can be detected accurately as no water is collected inside the probe.
- Accuracy of the probe can be checked any time with the supplied chamber.
- The probe is very light and therefore convenient for other applications (e.g. fixing the probe to the skin with double sided sticking rings for long-term measurements, measurements under movements, etc.).







***Technical Data***
*Dimensions: Length: 6.5 cm, Measuring chamber: Height: 2 cm, Inner Ø: 1.5 cm, Outer Ø: 3 cm, Cable length: 1.3 m, Weight: approx. 60 g;Teflon-centerpiece: Height: 2.5 cm, Inner Ø: 1.5 cm, Outer Ø: 3 cm (all data for standard probe) Resolution: relative humidity ± 0.01 % RH, Temp.: ± 0.01 °C, TEWL: 0.1 g/h/m², Measuring range: TEWL 0-320 g/h/m² Measurement uncertainty: Rel. Humidity (RH): ± 1.8 %, Temperature: ± 0.2 °C; TEWL: between 10 % and 80 % RH: ± 0.25 g/h/m² for TEWL values up to 5 g/h/m² and 5 % for values over 5 g/h/m² ;0 -10 % and > 80 % RH: ± 1 g/h/m² for TEWL values up to 5 g/h/m² and 10 % for values under 5 g/h/m² Technical changes may be made without prior notice.*

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## What Does It Measure?

The Colorimeter CL 400 measures specifically the colour of the skin. Measuring values are expressed as XYZ values and are calculated in L*a*b* and RGB as index values.

## The Measuring Principle

The probe sends out white LED light, arranged circularly to uniformly illuminate a large part of the skin.
The emitted light is scattered in all directions, some parts travel through the layers and some is scattered by the skin.
The light reflected from the skin is measured in the probe. The raw data of the probe are corrected with a special colour matrix to adapt them closely to standard values and are expressed accordingly.

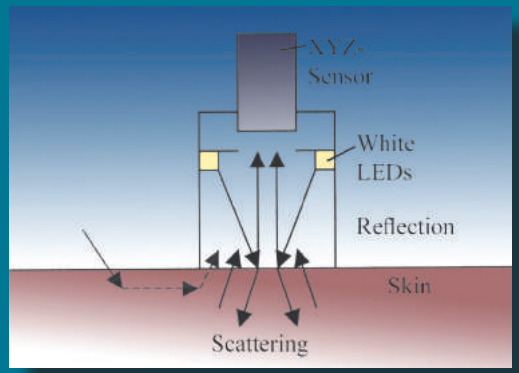
## Fields of Application

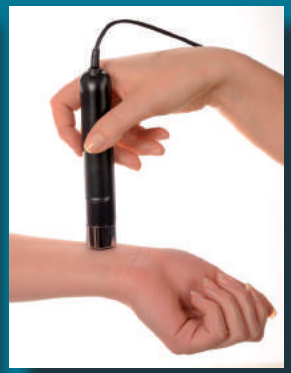
The probe has been developed especially for the needs of measuring changes in the skin color.

- Cosmetic and pharmaceutical efficacy tests, like for sun screen products, self-tanners, make-ups, whitening products, decorative cosmetics, hair care and carotene food supplements.
- Demonstration of aging spots, sun damage, inhomogeneous skin colour.

## Advantages

- Very reproducible results on the skin surface, ideal tool for comparison measurements.
- Specially designed for skin colour measurement, as the absorption and reflection behaviour of skin differs very much from other materials due to its translucency and the multilayers.
- Economic, extremely easy to handle, reproducible and short measuring time
- Large illumination area, so that sufficient light reaches the skin surface for the measurement but small enough measuring area to detect the surface colour.
- Light, constant pressure of the probe on the skin surface with minimized effect on the surface (pressure on the skin leads to changes in microcirculation and thus in skin colour).
- Easy check calibration function
- Available for C+K MPA-System, as stand-alone device and wireless probe.



***Technical Data***
*Length: 126 mm, Illumination: Ø 24 mm, Measuring area: Ø 8 mm, Weight: 85 g, Illuminated area approx. 17 mm Ø,*
*Units: XYZ, RGB, L*a*b* index values (due to the unique structure of the skin and the special light source the values do not fully correspond to ISO standards and are therefore expressed as index values).*
*Light: 8 white LEDs arranged circularly, range of emitted wavelengths: 440-670 nm*
*Calibration to skin colours with a special correction matrix. Measurement uncertainty: ± 5%*
*Technical changes may be made without prior notice.*

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## What Does It Measure?

The Skin-Glossymeter GL 200 is a quick, easy to use and economical tool to measure the gloss especially on skin. Also applications like measurements on lips, hair, teeth and other materials are easily possible.

## The Measuring Principle

The measurement is based on reflection. Parallel white light is created by the LEDs in the Glossymeter probe head and sent via a mirror in a 60° angle onto the skin surface. One of the two sensors measures the directly reflected light by a mirror, the other measures the diffuse reflected light vertically above the surface. So the Skin-Glossymeter GL 200 measures both, the portion of directly reflected light, which is related to the gloss and the scattered portion from the surface.

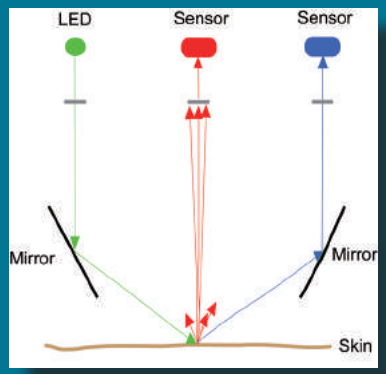
## Fields of Application

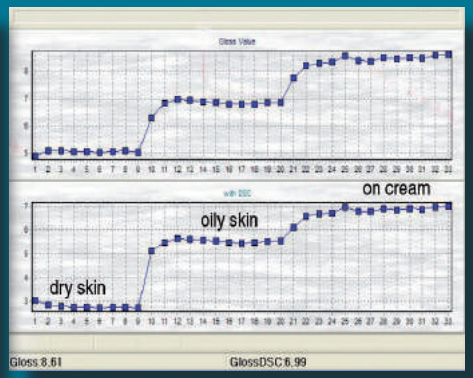
There are many applications in the R&D departments of the cosmetic industry where gloss is of interest.

- For efficacy testing and claim support for skin care, hair care and decorative cosmetics (lipsticks, make-up etc.)
- Evaluation of skin shine reducing or skin radiance enhancing products in facial care.
- Also suitable for assessment of dental gloss for developing and evaluating products for tooth surface enhancement.

## Advantages

- The diffuse scattering correction (DSC) is a unique function to specially assess the gloss of the skin. In contrary to uniform industrial material, the skin varies in structure, brightness and colour. The DSC eliminates the portion of diffuse reflected light, thus allowing to compare gloss measurements of different skin types accurately and easily.
- The probe allows a very quick measurement and is easy to handle.
- A spring in the measuring head provides constant pressure on the skin.
- Hair clip for reproducible measurements on hair.
- Continuous measurements possible.
- Available for C+K MPA-System, as stand-alone device and wireless probe.




***Technical Data***

*Dimensions: 13 cm x Ø 2.4 cm; Measuring area: 2.5 mm x 5 mm; Weight: 85 g incl. cable*
*Light: white LED, emittance at 60°, reflection measurement at 60°, diffuse reflectance measurement at 90°*
*Units: Glossymeter units (excellent correlation with industrial standard units GU based on DIN and ISO)*
*Measurement uncertainty: ± 5%*
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## What Does It Measure?

The Frictiometer FR 700 is a very interesting tool to measure the differences in friction on the skin in correlation to skin properties or products applied to the skin.

## The Measuring Principle

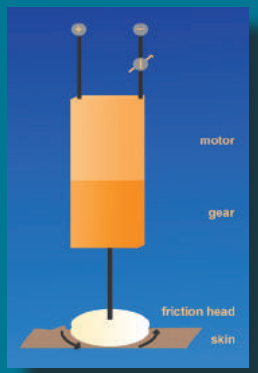
The probe contains a motor, a steering unit and the friction head. A constant rotational speed (adjustable to different speeds) is applied onto the skin by the friction head. The torque is measured and the result is displayed as Frictiometer units in the software.

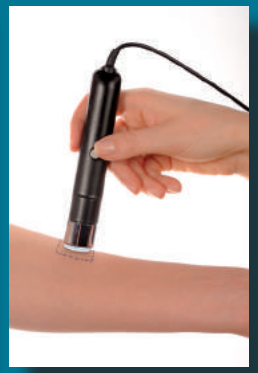
## Fields of Application

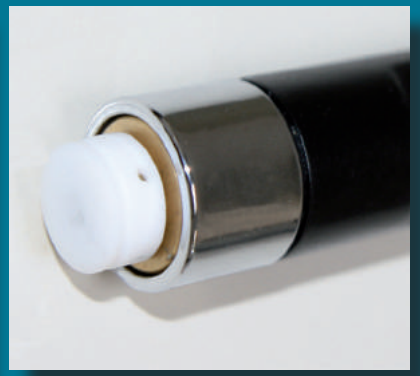
- With the Frictiometer it is possible to assess skin properties: e.g. normal and dry skin as well as skin with or without wrinkles will show different values.
- For testing of skin care products making the skin smoother leading to lower Frictiometer values. The w/o emulsions decrease the frictionary resistance more than the o/w emulsions.
- Effects of textiles and papers on the skin can be evaluated. Different materials of course have different Frictiometer values. For testing, the material is pulled over the friction head and fastened. Moist materials have a higher frictionary resistance thus also having a higher irritation potential on the skin. It is possible to study e.g. the effects of untreated paper tissues on the skin in comparison with paper tissues containing additives.

## Advantages

- Constant pressure on the skin by the weight of the rotating disk
- Different velocities of rotation can be set.
- Measurement on different surfaces is possible, e.g textiles, plastic, metal and many more.
- Quick measurements as well as continuous measurements over a longer time.
- The probe head can easily be cleaned.
- The irritation effects from the tests with textiles or papers can be determined with other C+K testing methods e.g. the erythema with the Mexameter®.
- Available for C+K MPA-System (except for the MPA2) and as stand-alone device.






***Technical Data***

*Dimensions: 2.4 x 12.8 cm; Measuring surface: 16 mm (plain teflon head); Weight: 140 g;*
*Pressure: 0.7 N; Units: Arbitrary Frictiometer units, Measurement uncertainty: ± 10 %*
*Technical changes may be made without prior notice.*

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## What Does It Measure?

The Skin-Thermometer ST 500 is a quick, easy and economical tool to measure the skin temperature.

## The Measuring Principle

The measurement is based on relative infrared temperature measurement.

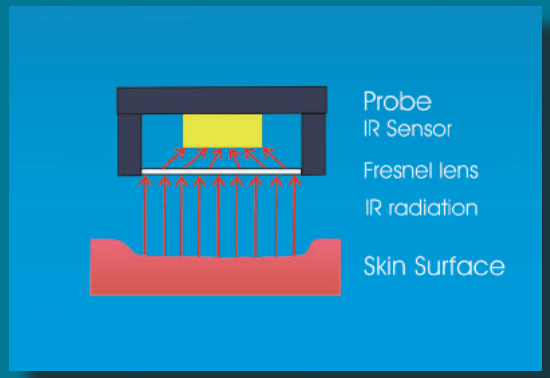
## Fields of Application

The probe finds its field of application everywhere where differences in the skin temperature and the skin microcirculation are of interest.

- It is a valuable tool for efficacy testing and claim support for cosmetics and special liniments (e.g. microcirculation enhancing products).
- Can be used for basic research for correlating skin temperature and microcirculation in dermatology and occupational health.
- Ideal for comparison of measurements on different body sites.

## Advantages

- The modern, high quality electronics of the probe allow a very quick measurement.
- The probe measures without contact, thus not influencing the microcirculation.
- Its low weight ensures easy handling.
- Ideal as accompanying measurement for other parameters, e.g. skin hydration largely depends on skin temperature.
- Available for C+K MPA-System, as stand-alone device and wireless probe.




***Technical Data***
*Dimensions: 13.5 cm; Weight: 85 g incl. cable; Measuring surface: Ø 2.4 cm;*
*Measurement range: 15 - 35°C, Measurement uncertainty: ±0.5°C, Resolution: 0.01°C*
*Technical changes may be made without prior notice.*

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## What Does It Measure?

The MoistureMap MM 100 is a device, featuring a capacitance based sensor comparable to the renowned L'Oreal SkinChip®* . The sensor gives graphical information on the near surface hydration distribution and the micro-topography of skin and other tissues (textiles, plants, etc.).

## The Measuring Principle

The sensor measures the penetration of the electromagnetic field. Conductive material e.g. water will reflect the signal making the resulting pixel darker while non-conductive material will make the signal go farther inside and the resulting pixel will be lighter on a scale of 255 grey levels. Rather than absolute moisture figures the MoistureMap indicates the distribution of hydration on the skin surface. On the 18.0 x 12.8 mm silicon chip of the sensor, over 90,000 capacitors are located. With a special image analysis software the image can be evaluated in different ways.

## Fields of Application

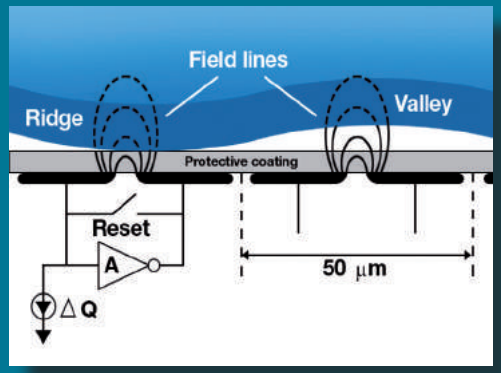
Wherever skin moisture distribution plays a role the MoistureMap MM 100 is a very impressive imaging addition to the pure quantitative measurements.

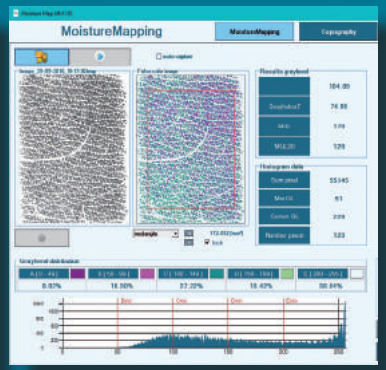
- Efficacy testing of cosmetics & pharmaceuticals & surfactants
- Sun damage and illustration of skin lesions and scars.
- To map the hair moisture level

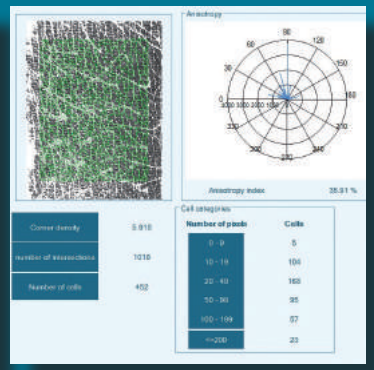
## Advantages

- Perfect addition to the quantitative measurement, as it shows the distribution of the water on the skin surface.
- Easy and quick to handle
- Live stream visible in the software
- Captured image in standard jpg-file
- Evenness of the hydration is displayed in 5 different colours and a histogram.
- Video possible (.avi)
- Spring loaded sensor
- Automatic saving of the images under study name
- Optionally footswitch to trigger measurement
- In-vivo skin measurement and also in-vitro application can be performed.
- Additionally topographic measurements (profile, corner density, anisotropy index) give interesting aging parameters.
- Easy calibration possibility for the user
- All results are saved in an Excel®-file
- Up to six images together with their complete results can be compared in one overview.
- The only instrument working side by side with the established Corneometer® and Tewameter®.

**The MoistureMap MM 100 is licenced worldwide under the L'Oréal patent for the Skin Chip® (EP 1 438 922 B1). A variety of articles on the measurement principle of the Skin Chip® (same as MoistureMap) has been published.*



***Technical Data***

*Device: Dimensions: 13 x 14.6 x 5 cm, Weight: approx. 1.5 kg, Power supply: external 100-240 VAC, 47-63 Hz, DC 12V/4A, Port: USB 2.0, type B connector*
*Probe: Dimensions: length: 16.6 cm, measurement head: 4.3 x 3 cm, Weight: approx. 90 g, Active measurement area: 18,0 x 12.8 mm, Sensor size: 256 x 360 pixel, Sensor resolution: 508 DPI 8Bit/pixel, Measurement principle: relative permittivity; MoistureMap in-vitro Adapter: Dimensions: 23 cm (H) x 8 cm x 8 cm, Weight: 220 g*
*Technical changes may be made without prior notice.*

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2017-03

## What Does It Measure?

The CutiScan measures the lateral skin displacement during circular suction/relaxation by video (optical flow).
It offers a new dimension of looking at the mechanical properties of the skin (viscoelasticity & anisotropy).

## The Principle

The probe combines mechanical force with imaging. It consists of a suction ring which draws the skin uniformly in all directions with a constant negative pressure provided inside the CutiScan-device for some seconds. Then it releases the applied pressure completely again for some seconds. During the suction and recovery time a high resolution CCD camera inside the probe monitors the displacement of each pixel by an optical flow algorithm (Horn-Schunk method) in a video. From that video an overall graph of the skin dislocation is made.

From these graphs interesting measurement parameters can be calculated.
Each direction in the graph leads to a curve of suction vs. relaxation (related to those known from other mechanical measurement methods for the skin).

The higher the skin's ability to resist the displacement, the firmer the skin.
According to its elastic/viscoelastic properties skin cannot get back to the original position immediately after the pressure has stopped.

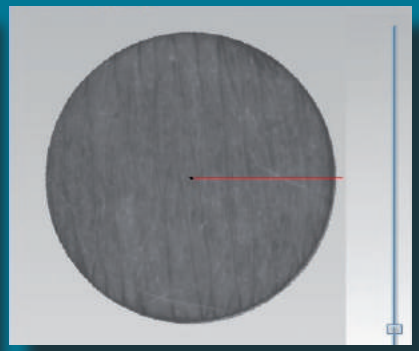
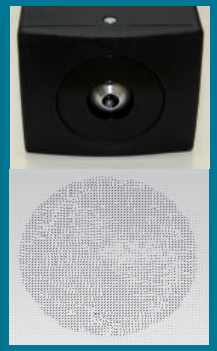
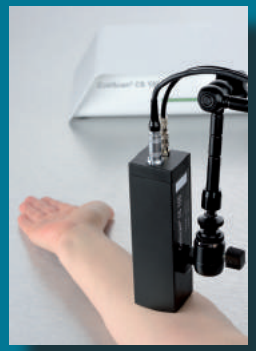
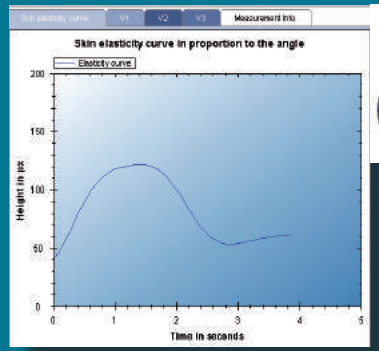
When looking at the skin displacement in all directions, it becomes obvious that in some directions the displacement and the returning rate are higher than in others depending on the linearity of the skin (anisotropy).

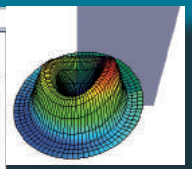
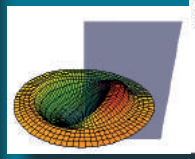
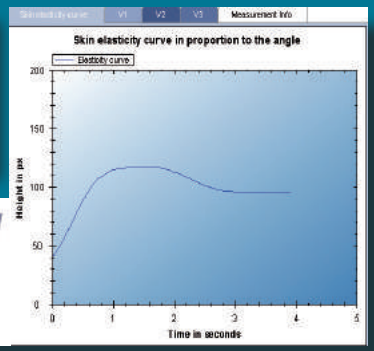
## Fields of Application

There are no limits to applications wherever skin aging and elastic properties play a role.

## Advantages

- Completely new & promising approach
- Information not only about the elastic & viscoelastic properties but also on anisotropy and directionality of the skin
- For each measurement a complete video is available
- From that video a graph consisting of 360 elasticity curves is calculated and all curves can be saved in Excel®.
- Overall measurement graphs are available for maximum and minimum amplitude as well as for viscoelasticity. They can be easily transferred into Excel®.


***Technical Data***
*Device: Dimensions: 39 x 22.5 x 7.6 cm, Weight: 4.1 kg; Power supply: external 100-240 VAC, 47-63 Hz, DC 12V/4A; Port: USB 2.0, type B connector; Probe with integrated camera unit: Dimensions: 14.5 x 5.5 x 4.7 cm, Weight: approx. 370 g, Suction ring: 14 mm Ø, Connections to device: pneumatic & USB, Cable length: 150 cm; Camera module: Image area: 5 mm Ø; Resolution: 1280 x 1024 pixel (approx. 1.3 MPix), Illumination: 20 UV-LEDs, (395nm - 400nm)*
*Measurement principle: suction (pressure setting up to 500 mbar) with simultaneous video of the displacement of the single image pixels, Units: displacement in pixel.* *Technical changes may be made without prior notice.*

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2017-03

## What Does It Measure?

The Visioscan® VC 98 USB is a special UVA-light video camera with high resolution to study the skin surface directly. The images show the structure of the skin and the level of dryness very impressively.

## The Measuring Principle

The camera features a high resolution b/w video sensor and a UV-A light source (proven to present no hazard to normal human skin) for uniform illumination of the skin.

## Fields of Application

- Efficacy testing and claim support for cosmetics, pharmaceuticals and detergents.
- Studies of skin roughness and microrelief.

## Software & Parameters

The camera system can be connected to the computer by USB. A variety of interesting parameters can be determined:

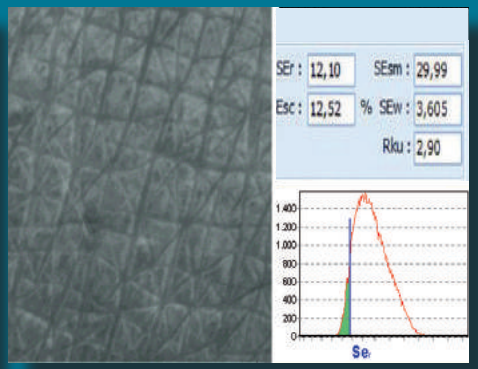
- The evaluation method SELS (Surface Evaluation of the Living Skin)* analyses the grey level distribution and allows the calculation of four clinical parameters to quantitatively and qualitatively describe the skin surface as an index: Skin smoothness ($SE_{sm}$), Skin roughness ($SE_r$), Scaliness ($SE_{sc}$), Wrinkles ($SE_w$).
- Evaluation of desquamation index directly on skin & scalp or with the foil Corneofix® F20.
- Determination of sebum production with the foil Sebufix® F16 .
- Additional interesting functions, e.g. anisotropy, hair length measurement after shaving.

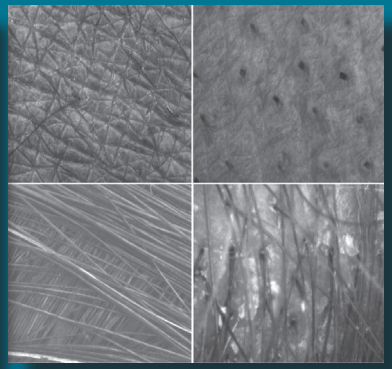
** developed by the Institute for Experimental Dermatology, Prof. Tronnier, University of Witten-Herdecke, Germany*

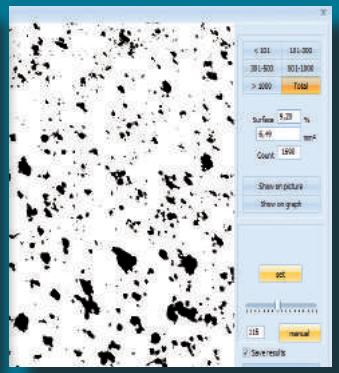
## Advantages

- The special UV-light gives a very sharp and non-glossy image.
- Pigmentation underneath the skin surface can be shown very well.
- All results can be stored, printed out together with the images and exported to Excel®.
- Easy and quick calibration of the system.
- A macro function allows the analysis of many images at the same time.
- Worldwide established method with many studies.
- Even used for the SKIN-B project on the ISS in space.**
- The Visioscan® VC 98 USB can be used together with the Skin Visiometer® SV 700 as combination instrument.

** *Study by DermaTronnier, instruments verified for space by Kayser-Threde GmbH on behalf of the DLR space travel management.*



***Technical Data***

*Dimensions: 11.8 x 5.6 x 4.8 cm;Weight: 250 g; Image size: 12 x 9.5 mm; Sensor resolution: 1/2» B/W CMOS-sensor 1.3 MPix (1280 x 1024 pixels); Light source: UVA approx. 390 nm*
*Connection box: Dimensions 14 x 5.5 x 15 cm; Weight 1 kg; Interface: USB 2.0, type B connector*
*Power supply: Input: 110-250 V, 47-63 Hz, Output: DC 12V/4A*
*Technical changes may be made without prior notice.*

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2017-03

## What Does It Measure?

The Skin-Visiometer® SV 700 is an established tool to evaluate the topography of the skin surface by light transmission of a very thin, special blue dyed silicone replica.

## The Measuring Principle

The replica is placed between a parallel light source and a b/w CMOS-camera. The light is absorbed according to the thickness of the silicone material. The replica reproduces the heights and depths of the skin as a negative, i.e. wrinkles are higher in the replica as the silicone is thicker in this place. The amount of absorbed light is calculated by Lambert and Beer's Law: $\Phi_{ex} = \Phi_{in} \cdot e^{-kd}$

The outgoing light is proportional to the incoming light, the thickness of the material and the material constant k.

## Software & Parameters

The image is digitalized by the instrument and shows the heights and depths of the replica on a grey scale (256 grey values). Thus the depth of each pixel can be calculated in µm by the special software.

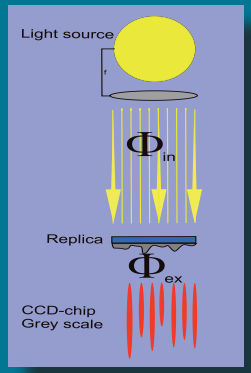
- Many functions and calculations are very quickly available in the software.
- Lines can be drawn on the images and the profile and the results are shown immediately.
- Calculation of standard roughness parameters Rt, Rm, Rz, Rp and Ra for up to 180 lines (drawn vertically or horizontally on the image).
- Calculation of special parameters: volume ($mm^3$), unfolded surface (%), anisotropy and cell density.
- Display of coloured 3D image, relief, false colour.
- Determination of desquamation and sebum production with foils Corneofix® F20 & Sebufix® F16 .

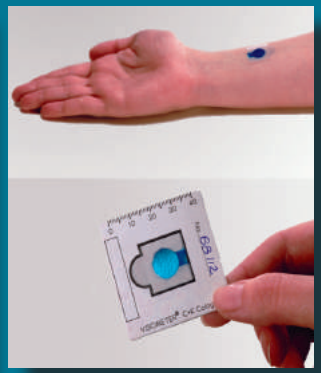
## Fields of Application

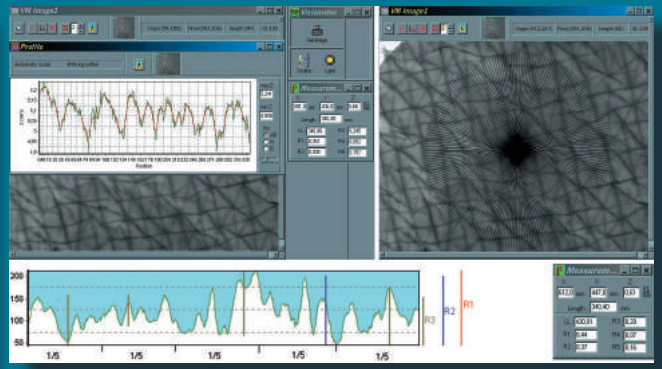
Indispensable tool for the R&D laboratories or the test institutes for efficacy testing of anti-aging products.

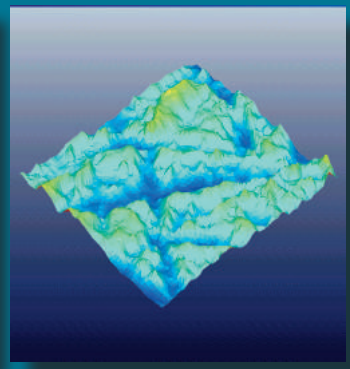
## Advantages

- The two-component silicone is very fluid reproducing even smallest skin depths and hardens very quickly.
- Very high resolution of the image.
- Replicas can be made in different places, be stored over a long term and then be evaluated together by a macro function.
- All results can be stored, printed out together with the images and exported to spreadsheets (Microsoft Excel®).
- Easy and quick calibration of the system.
- The skin camera Visioscan® VC 98 USB with its analysing software SELS (Surface Evaluation of the Living Skin) can be added to the system.







***Technical Data***

*Power supply: external 100-250 VAC, 47-63 Hz, 1 A max.; Dimensions: 26 x 24 x 7 cm; Weight: 2.7 kg*
*Measurement area : 7.5 x 5 mm ± 21 µm (360 x 274 pixels); Resolution: 2560x1920 pixel (5 MPix)*
*Light source: globe with power LEDs; Interface: USB 2.0, connection for Visioscan® VC 98 USB;*
*Pump: Power supply: 100-250 VAC, 47-63 Hz, 4A, Dimensions: 26.5 x 12x 8 cm, Weight: 2.5 kg;*
*Computer: Windows® 7, 8 or 10, performance must meet system requirements, USB 2.0; 3.0*
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2017-03

## What Does It Measure?

The Sebufix® F 16 is a special foil absorbing the sebum of the skin surface by its micro pores.

## The Measuring Principle

The foil is applied to the skin and the sebum will become visible as transparent spots in various sizes after only a few seconds. The lateral spread of sebum in the foil is minimized.
Skin with low oil content shows a few small spots, whereas oily skin is visualized by numerous large spots.

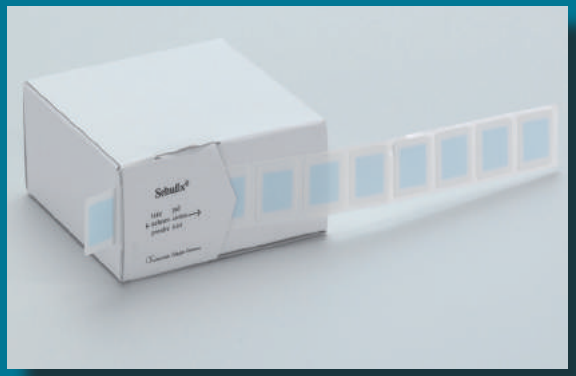
## Fields of Application

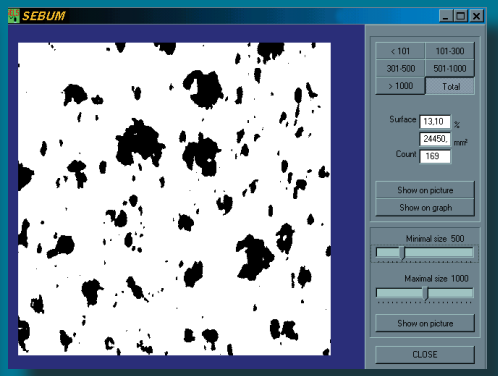
In addition to the well established quantitative measurements, Sebufix® F 16 offers a more qualitative approach towards skin sebum.

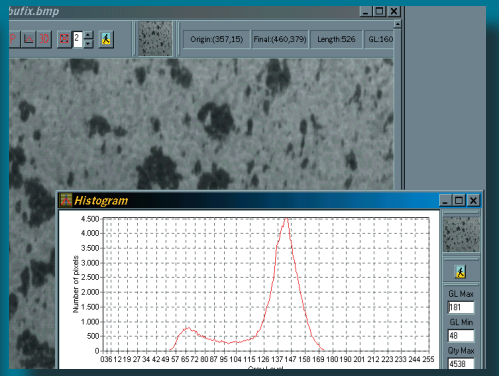
- It is a very helpful tool for investigating the activity of the sebacious glands.
- In cosmetology for formulation and efficacy testing, the sebum level of the skin is one of the most important parameters.
- Especially suitable for the field of cleansers, anti-acne skin care, cosmetics for oily skin etc.
- Studies of the characterization of the hydrolipidic film.

## Advantages

- The very quick measurement without any glue has no occlusion effects on the skin thereby avoiding false results.
- The measurement is not influenced by the hydration level of the skin (sweating).
- The Sebufix® F 16 is a very good addition to the Visioscan® skin camera. The sebum production can even be monitored live over a given period on a video monitor. With the software the number, size and area covered with spots can be evaluated.
- Also with the Skin-Visiometer® software the foils can be assessed.
- Numerous studies have been performed with this interesting tool.




***Technical Data***
*Dimensions: 1.7 cm x 1.7 cm; Thickness: 0.2 mm*
*The foils present no hazard to the skin.*
*Technical changes may be made without prior notice.*

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## What Does It Measure?

The Corneofix® F 20 is a special foil collecting corneocytes (flakes of dead cells). The number, size and thickness of the corneocytes indicate the hydration level of the stratum corneum. Many thick, large corneocytes can only be collected when the skin is dehydrated or even damaged. Well moisturized skin shows small regular flakes.

## The Measuring Principle

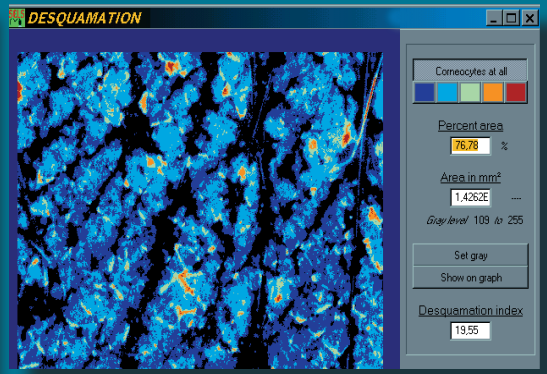
The adhesive side is applied to the skin area to be measured. On removing the tape from the skin the corneocytes stick to the tape.

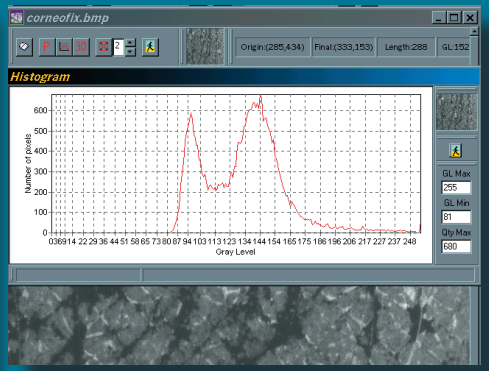
## Fields of Application

- In cosmetology for formulation, efficacy testing and claim support, the moisture content of the skin is one of the most important parameters.
- The Corneofix® F 20 is perfectly suitable for skin surface strippings in various applications.

## Advantages

- The method is quick, easy and economical.
- The foils come in a convenient dispenser.
- The Corneofix® F 20 is a very good addition to the Visioscan® skin camera or the Visiometer®. With the software the number, size and area covered with flakes can be evaluated as well as a desquamation index.
- Numerous studies have been performed with this interesting tool.


***Technical Data***
*Dimensions: 2.00 cm x 1.95 cm; Thickness: 0.1 mm*
*The foils present no hazard to the skin.*
*Technical changes may be made without prior notice.*

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## What Does It Measure?

The Visioline® VL 650 is the ideal instrument to objectively analyze the deeper lines and macro wrinkles such as crow's feet. It is a further development of the renowned Quantirides® system.

## The Measuring Principle

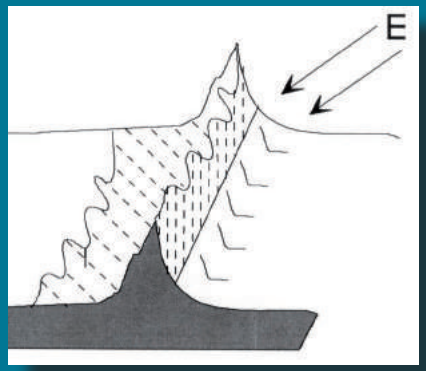
The measurement is based on skin replica and oblique lighting. The replica is illuminated at an angle of 35° and the mountains representing the wrinkles of the skin produce measurable shadows. They are digitalized by a high resolution camera mounted vertically to the replica and serve as a basis for different arithmetical calculations (length, depth and area of the wrinkles in µm).

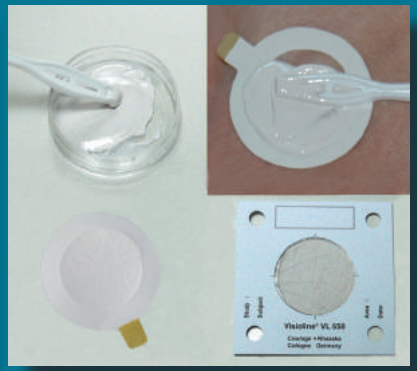
## Fields of Application

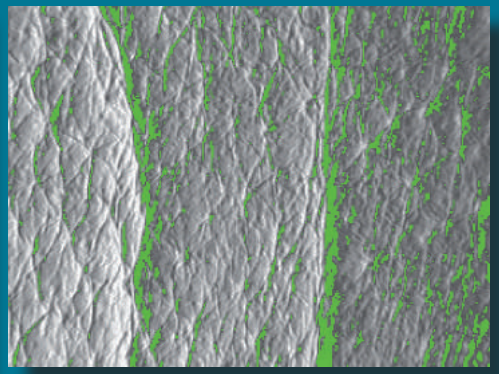
- It is indispensable in efficacy testing and claim support for cosmetic anti-wrinkle products.
- Perfect tool for multicentric studies, as the replicas can be collected over a long time in different places and then be evaluated together.

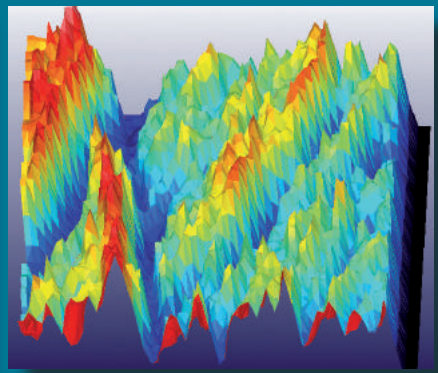
## Advantages

- Easy to make replicas in all sizes of all different body sites.
- On the mount the replica can be moved very accurately in x and y direction by screws.
- To analyse the same site before and after treatment, perfect placing is possible with the help of a histogram of the shadows and an overlay mask of the previous replica.
- Measurements and calibration can be performed very quickly.
- 3D and false colours for impressive marketing purposes available.
- All study data are automatically stored in a database in the software.







***Technical Data***

*Power supply: illumination: external, 12 VDC , Camera: USB; Dimensions: 15.3 x 21.7 x 21.7 cm;*
*Measurement area: from 13.5 x 18 mm to 16.5 x 22 mm; Weight: 4 kg; Port: USB; Light source: white LED under 35° (± 0.5°); Shadow length determination in µm; xy-Stage: Resolution: 1µm, Accuracy: 2µm, Range: 10 mm ;*
*Camera: 2560 x 1920 Pixel, 5 MPix; Objective: Focal length: 25 mm, Aperture: 1.4 - 16;*
*Computer: Windows® 7, 8 or 10, performance must meet system requirements, USB 2.0*
*Technical changes may be made without prior notice.*

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2017-03

## What Does It Do?

The VisioFace® RD and its software have been developed in cooperation with our partners Monaderm to take high resolution full face photos under standardized conditions. It is focused on simple organisation of the photos and detailed comparisons.

## The Device

The VisioFace® RD is equipped with a stable, long lasting and homogenous illumination for the face by 210 white light LEDs. A high resolution reflex camera (18 Mpx) with a special objective is integrated.

## Fields of Application

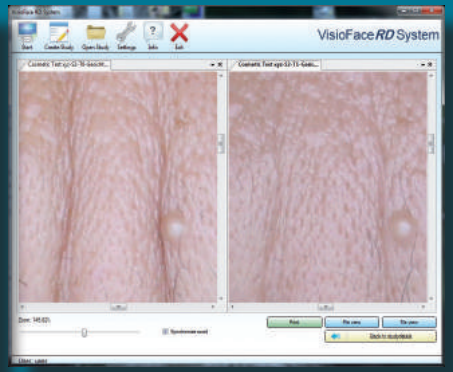
Ideal device for

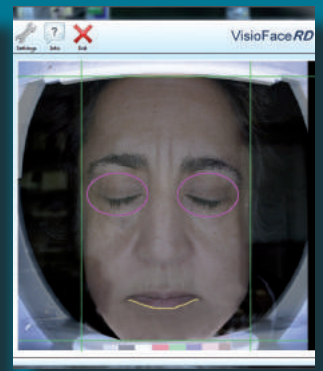
- treatment documentation
- performing efficacy studies
- image comparison over a long period

## Advantages

- Removable head and chin rest allowing exact positioning frontally or sidewise
- Reproducible positioning of the face: overlays (ghost images) of previous images of the person and drawing of marks on interesting parts are possible.
- A colour chart is photographed with each face to make photos comparable over time and ambient light conditions.
- Conveniently designed software to enable you to work quickly.
- Easy creating of studies with volunteers and different stages.
- Perfect organization of all photos for later comparisons.
- Zoom into several images at the same time to compare. Up to 10 images can be viewed in tile view, and more images in pile view.
- Different print options (images by study, person, time or only the details of a study)
- All changes of the data in a study are recorded in a „history“.
- The software works with a login. Different rights can be provided for administrators (creating of studies, deleting of images, etc.) and for users.
- Possibility of adapting the software to your CI by changing the logo and the background colour.






***Technical Data***

*Dimensions: 54 x 50 x 44 cm, Weight: approx. 12 kg, Illumination: 210 white LEDs, Camera: Canon EOS 550D, 18 Mpx, sensor CMOS, autofocus, images can be saved as jpg (recommended) or png, Objective: EF 20 mm/2.8, USM: focal length 20 mm, filter diameter 72 mm, focus by ultrasound, Power Supply: external 100-250 V, 47-63 Hz, DC 12V/4A, Port: USB*
*Computer: Windows®7, 8 or 10, performance must meet system requirements, USB 2.0, 3.0*
*Technical changes may be made without prior notice.*

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2017-03

## What Does It Measure?

The Visiopor® PP 34N camera uses a specific UV-light to visualize the fluorescing acne lesions of an area of 6.4 x 8 mm. The orange-red fluorescence indicates the presence of Propionibacterium acnes within clinically non-evident (follicular impactions and microcomedones) and clinically evident (comedones, papules and pustules) lesions.

Acne is a common disorder of the pilosebaceous follicles with the multifactorial pathogenesis. It typically begins in adolescence when androgen hormones stimulate the production of sebum and proliferation of follicular epidermis. The openings of hair follicles become clogged with oil secretion and corneocytes. In consequence initially invisible lesions (microcomedones) and then clinically evident comedones develop. Microcomedones and comedones are further colonized by P. acnes bacteria which promote inflamed acne lesions (papules and pustules) through the production of proinflammatory mediators, free fatty acids and porphyrins.

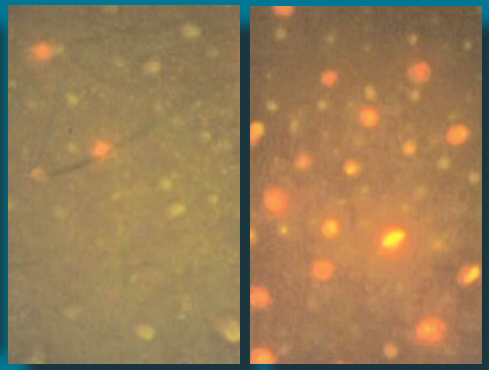
The presence of porphyrins can be demonstrated by orange-red fluorescence in the follicle openings by examining the skin under appropriate UV-A light. The intensitiy of follicular fluorescence and the extent of facial involvement are proportional to the population densitiy of P. acnes and porphyrin content at the skin surface.

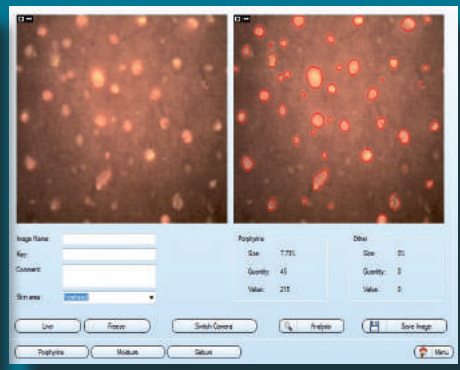
Improvement after facial washs is accompanied by significant reduction of the porphyrin concentration and the number of P. acnes, respectively.

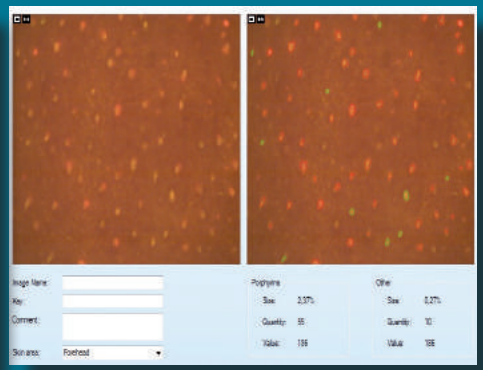
## Advantages & Fields of Application

There are numerous applications in cosmetology especially in the field of skin impurities.

- Detection of early invisible lesions and visualization of advanced small acne lesions in the esthetic field.
- Efficacy testing of anti-bacterial products and drugs against P. acnes.
- Determination of the comedogenic and comedolytic activity of topically applied products.
- Non-invasive, easy to use and economic.
- Comfortable software for the evaluation of the number and size of the fluorescent spots.
- Possibility of distinguishing between the red-orange spots (porphyrins) and the yellow-greenish spots (others).







***Technical Data***

*Camera works with Windows Vista , 7 and 8.1; Interface/Power supply: USB 2.0, type A connector; Dimensions: approx. 12 x 5.5 x 5.5 cm; Cable length 1.5 m; Illumination: 16 UVA- LEDs, 375...385 nm; Measurement area: 6.4 x 8 mm; Resolution: 1280 x 1024; Camera button to freeze the image*

*Computer: Windows®7, 8 or 10, performance must meet system requirements, USB 2.0, 3.0*

*Technical changes may be made without prior notice.*

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electronic

## What Does It Measure?

Easy and quick method to analyse dandruff in number and size.

## The Principle

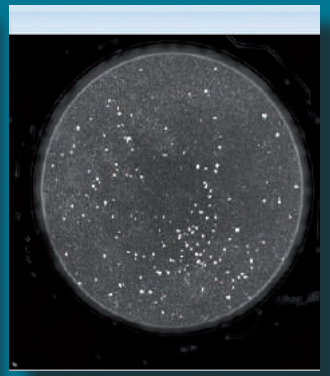
The system consists of a device in which a petri dish with the collected dandruff is inserted. A circularly arranged LED light source illuminates the sample homogeneously on a dark background. The high resolution camera above the sample takes the image and the software detects all dandruff and categorizes it in 9 different size classes.

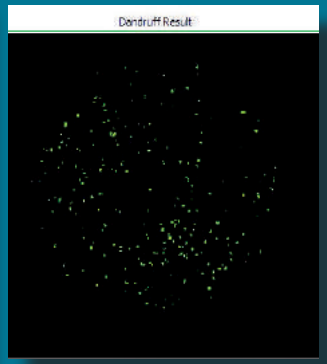
## Fields of Application

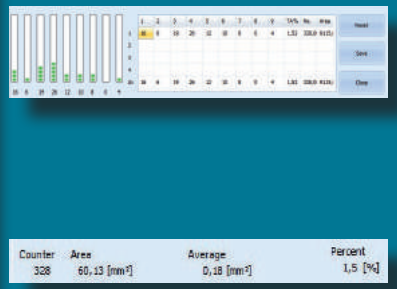
Hair care is a large field in the cosmetic industry. Analysing dandruff is one of the most important concerns in research of hair care products and their efficacy testing.

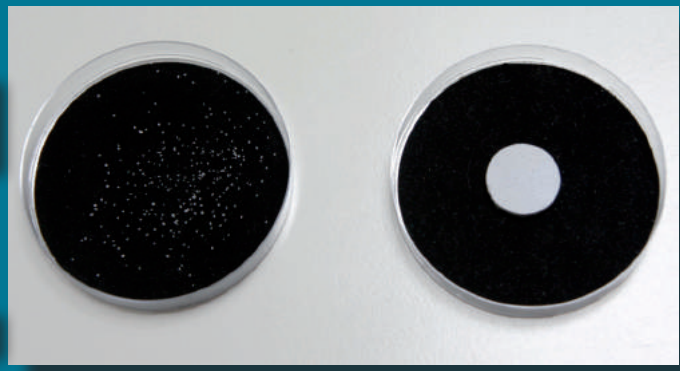
## Advantages

- Quick and easy handling of the device.
- Simple connection to the computer by USB
- Dandruff is evaluated by number & size (in pixel and mm²) for 9 different size categories which can be determined by the user.
- The average of up to 4 images is automatically calculated.
- Software conveniently allows evaluation of complete studies.
- Easy calibration of the system.



***Technical Data***

*Dimensions: 13.5 x 13 x 15.3 cm (H x W x D), Bevel: 10° on the front, 60° on the back, Opening: 9.2 x 3.1 cm (W x H), Weight: 1.35 kg, Port: USB 2.0, Power supply: Input: 110-240 V, 50-60 Hz, Output: DC 12V/max. 4A, Light source: white LED light, arranged circularly, USB-Camera: 1/2" CMOS, Resolution: 1280 x 1024 Pixel = 1.3 MPixel, max. 25 images/second, Objective: M12; 6 mm focal length, distance camera to sample: approx. 9 cm, Petri dish: Ø 8.5 cm, visible field Ø 7.5 cm.*

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## What does it measure?

Compact device with display for the measurement of skin moisture, sebum and pH on the skin surface.

## The Measuring Principle

Corneometer®: Capacitive measurement. The change of the dielectric constant by moisture on the skin surface is determined.

Sebumeter®: Based on grease spot photometer. The foil of the Sebumeter® cassette is brought into contact with skin or hair. The foil becomes transparent proportional to the sebum content of the measured area. Then the cassette is inserted into the measuring aperture and the transparency is measured by a photodiode.

Skin-pH-Meter®: The measurement is based on a high quality combined electrode, where both $H^+$ ion sensitive electrode and additional reference electrode are placed in one glass housing. It is connected to a probe handle containing the measurement electronics.

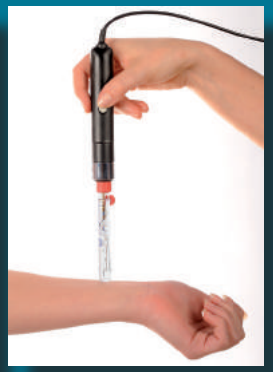
## Fields of Application

Ideal instrument for

- Research to characterize the hydrolipidic film of the skin.
- Recommendation of individual skin care products in practice.
- Occupational medicine to demonstrate skin damages and to advise consistent application of skin protection products.

## Advantages

- Values shown on a digital display.
- The software stores all measured values together with the patient data. They can be printed and processed with statistical programmes.
- Check calibration function available.
- Quick and easy handling.
- Worldwide acknowledged measuring methods used in a multitude of studies.




***Technical Data***

*Dimensions: 10 x 26 x 25 cm, weight : 2.3 kg, external power supply: 90-264 V, 50-60 Hz*
*Measuring principles: Corneometer®: capacitive, measuring area: 49 mm², frequency 0.9-1.2 MHz*
*Sebumeter®: photometrical, sebum content in mg/cm²*
*Skin pH-Meter®: pH 0 to pH 12*
*Technical changes may be made without prior notice.*

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## What does it measure?

The Meibometer® MB 560 is a unique tool to measure the sebum content of the lacrimal fluid.

## The Measuring Principle

The measurement is based on grease spot photometry. The Meibometer® strip consisting of Sebumeter® tape is brought into contact with the lacrimal fluid on the lower eyelid margin. It becomes transparent in relation to the lipid content of the tear film. Then the strip is inserted with the slider into the device and the transparency is measured by a photocell, where the strip had been in contact with the lacrimal fluid. The peak of the light transmission curve represents the sebum content.

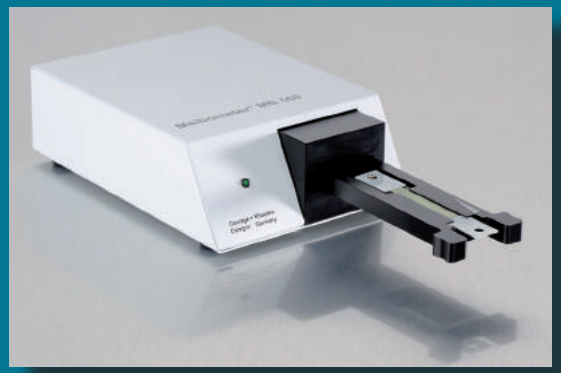
## Fields of Application

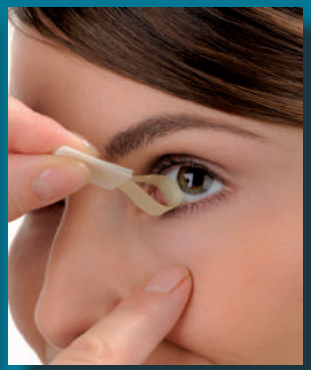
There are several applications in human and veterinary ophthalmology where the sebum content of the lacrimal fluid is of interest.

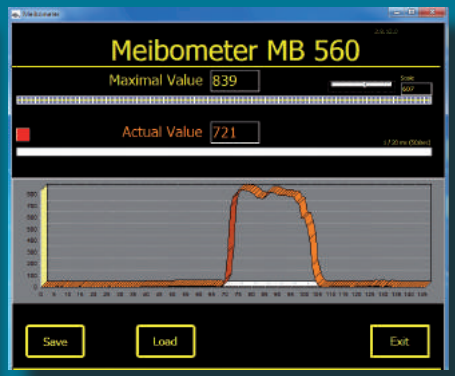
- It is important for basic research on the meibomian glands and the tear film.
- It is used for basic research of eye diseases, especially regarding the dry eye syndrome.
- It is important for efficacy testing of pharmaceutical products and safety testing of cosmetics used around the eye.

## Advantages

- Quick and easy handling of the foil strip for collecting the lacrimal fluid.
- Comfortable and reproducible measurement with the strip slider of the device.
- Display of the lipid content results in the software.
- Interface and power supply by USB connection, no extra power supply needed.








***Technical Data***

*Dimensions: 13 x 5 x 18.2 cm (+ 11 cm with extended slider), Power supply: via USB, type B connector; Weight: 0.9 kg*

*Measurement principle: photometrical, Strip: Sebumeter® foil*

*Technical changes may be made without prior notice.*

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