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.
- Operation with the overall **MPA CTplus software** for all devices and probes (with cables).
- With a **check calibration function** the accuracy of the probes can be verified any time.
- **Room temperature & rel. humidity** from the sensor RTH 100 are saved with the measurements.
- Ideal system for **efficacy testing and claim support**, and all kinds of **scientific studies** as well as field tests.

Which Basic Devices are Available?

Multi Probe Adapter MPA 6

- Connection of up to five probes, inbuilt Sebumeter®

Multi Probe Adapter MPA 10

- Connection of up to nine probes, inbuilt Sebumeter®

Cutometer® Dual MPA 580

- Connection of up to two Cutometer® probes and four additional C+K standard probes, inbuilt Sebumeter®

Multi Probe Adapter MPA 2

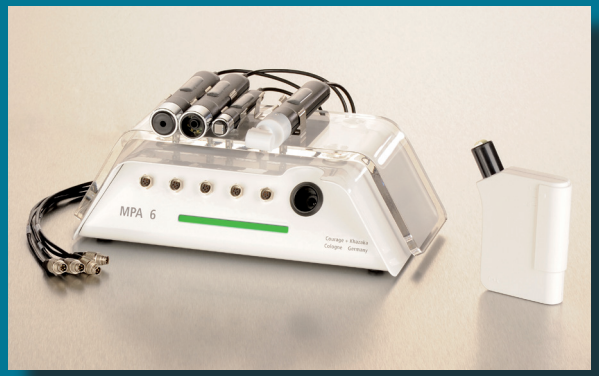
- Connection of up to two probes, USB powered

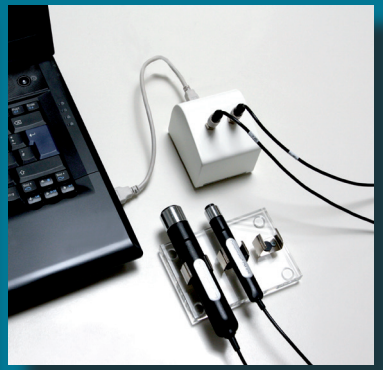
Multi Display Device MDD 4

- Stand-alone device with one probe & ambient condition sensor, connection of two additional probes possible
- Large graphic colour display for showing results, operation with the turning knob
- Optional possibility of working with the MPA CTplus software

Which Probes for Non-Invasive Measurements Can Be Connected?

• **Corneometer® CM 825**	*Moisture*
• **Sebumeter® SM 815**	*Sebum*
• **Skin-pH-Meter PH 905**	*pH*
• **Cutometer® 580**	*Viscoelasticity*
• **Tewameter® TM Hex**	*Transepidermal*
• **Tewameter® triple TM 330T**	*Waterloss (TEWL)*
• **Tewameter® TM Nano**	*TEWL small Ø*
• **Invitro Tewameter® VT 310**	*TEWL in vitro*
• **Mexameter® MX 18**	*Melanin / Erythema*
• **Skin Colorimeter CL 400**	*Colour*
• **Glossymeter GL 200**	*Gloss*
• **Skin-Thermo-Meter ST 500**	*Temperature*
• **Indentometer IDM 800**	*Mech. Properties*
• **Frictiometer® FR 700**	*Friction Resistance*
• **RHT 100**	*Ambient condition sensor*





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: Dim.: 39.0 x 22.5 x 7.6 cm; Wt.: 3.9 kg
MDD 4: Dim.: 14 x 27.7 x 9 cm; Display: 9.6 x 5.7 cm; Wt.:1.4 kg
Interface: USB 2.0 type B connector; Power supply: ext.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
Ambient Condition Sensor RTH 100: Dim.: 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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Advantages of the Overall Software MPA CTplus

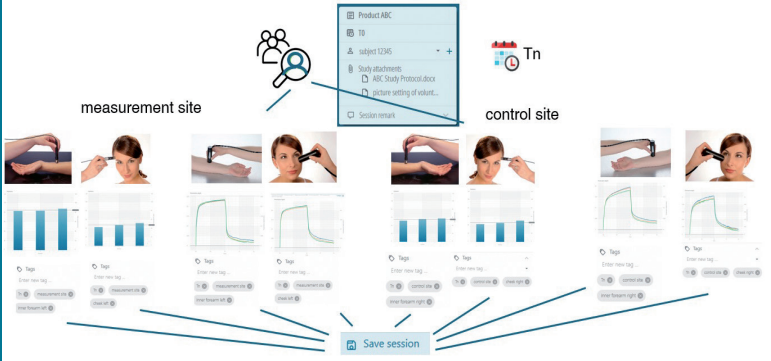
- For the first time **all probes** can be operated with **one software** and the results are saved in **one database.**
- Software works with **any MPA system** and Cutometer® Dual MPA 580 as well as MDD devices and supports **several devices at the same time**.
- Convenient, **intuitive**, modern software, **easy to navigate**.
- Perform **free measurements** anywhere, with any probe in any order or use the study manager to **design your study**.
- Easy organization of the measurements in **sessions and takes**.
- **Graphic display** of the measurements and **numerical result values** side by side.
- All information go into one database, convenient possibility of **filtering the data** you want to export to Excel®for statistical analysis with special **export assistant**.
- **Tags** are the new, modern way of **identifying measurements** in the database.
- Easy and self-explanatory **check calibration** function for the probes with report.
- New, exciting **additional aging-parameters** for the Cutometer®.
- Graphic **explanation of complex results**.
- **Intelligent software** displaying messages useful for handling or servicing the probe.
- Optional function to identify measurements **out of a certain range** of the average. These possible artefacts can be **deleted/replaced**.

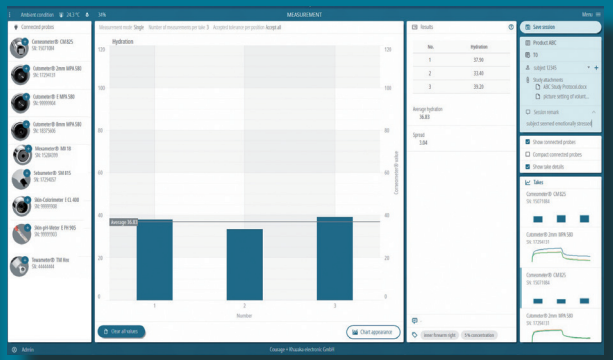
Working with the Study Manager

- Creating a study **beforehand** will save time during work as only a **minimum of clicks** is needed.
- **Select probe(s)** for one session (subject/t) and configure their use.
- Select **number of measurements** per probe/site and the next measurement **window will open automatically**.
- **Tag** the different takes e.g. with skin area, product type, etc. These identification tags are **automatically added** during measurement.
- **Attach any files** to your study to be viewed in the measurement menue (e.g. pictures, study protocols).
- Add **subjects** anytime during your work to be available for all sessions.

Ambient Condition Sensor RHT 100

- The values for **relative humidity and temperature** from the Ambient Condition Sensor RHT 100 are constantly recorded and saved with the measurements to become more **comparable and reproducible**.
- Important as as all parameters will largely be **influenced by the ambient conditions**.





Technical Requirements:
Windows® 10; Screen resolution: minimum 1280 x 720, recommended 1920 x 1080; USB 2.0, 3.0;
CPU: Intel i3/i5/i7 3rd generation; AMD Phenom II X4, or higher; Optional dedicated graphics card for smoother curve visualization, RAM: 4GB; programme to open Microsoft Excel® files is recommended to view exported results.
The software is license-based and a license comes with every new MPA/MDD system. Download the software for a 10 days trial from our download section for registered customers.
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 obtain exact and reproducible values of 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 by capacitance differences of a precision capacitor.

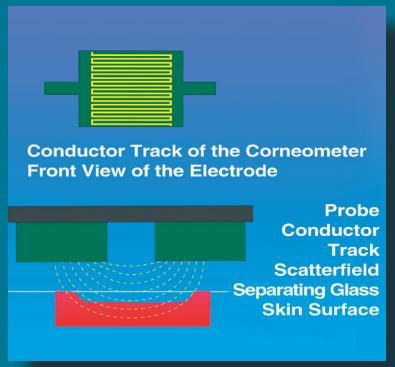
Fields of Application

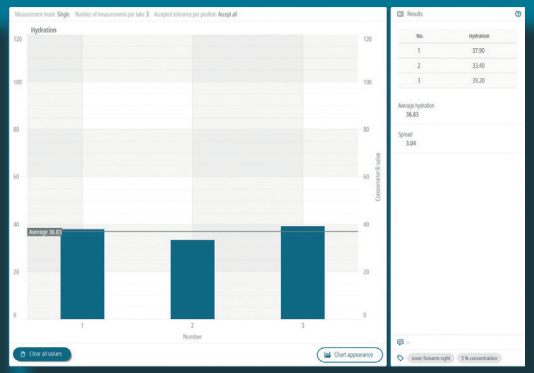
The hydration measurement is the **basic measurement** for all applications in **basic research and cosmetics.**

- 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**.
- Demonstration for **occupational health** to alert people to specific skin hazards and convince them of skin protection measures.

Advantages

- Substances on the skin (e.g. salts or residues of topical applied products) have **only minimal influence** due to capacitance measurement.
- The high quality electronics of the probe allow a **very quick** measurement (1 s). This is important to avoid occlusion effects.
- The measurement **depth is very small** (10-20 µm of the Stratum corneum) to exclude 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.
- **Easy cleaning** of the probe sensor.
- Worldwide established as „corneometry" with a **broad range of studies**.
- Even used for **space missions** on the ISS.*
- Available for C+K **MPA-systems**, as stand-alone device (MDD) and wireless probe (operation with MPA Wireless software).





Technical Data (for probe with cable)
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 opaque tape of the Sebumeter® SM 815 is brought into contact with skin or hair. It becomes transparent in relation to the **amount of sebum** on the surface of the measurement area. When the tape is inserted into the aperture of the device, the **transparency is measured** by a photocell. The light transmission reflects the sebum content.

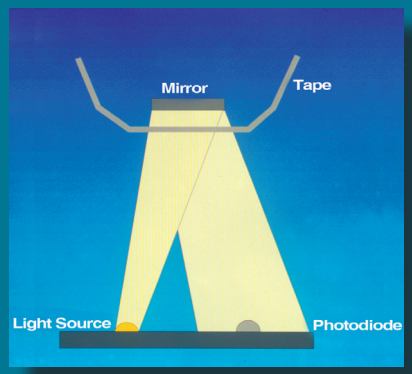
Fields of Application

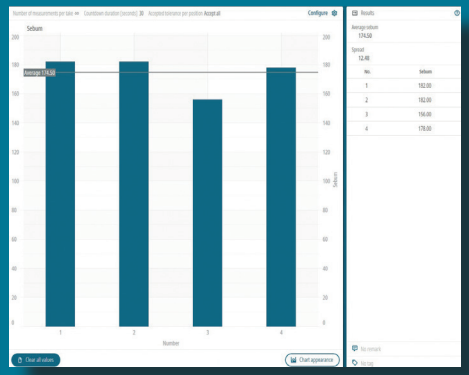
There are many fields of application where the sebum content plays a major role.

- 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 cosmetics and pharmaceuticals (especially cleansers, anti-acne products, shampoos and hair care, products for oily skin).

Advantages

- The special tape detects only oil and is **not influenced by moisture**.
- A spring in the measuring head provides **constant pressure** on the skin.
- The low weight cassette permits **convenient** measurements at all body sites.
- One measurement cartridge lasts for approx. **400 measurements**.
- The accuracy of the Sebumeter® can easily be **checked any time**.
- Hundreds of **studies** have been done with the Sebumeter®.
- Available in the C+K MPA-systems and as stand-alone device (MDD).





Technical Data

Dimensions: 8.5 x 11.3 x 2.3 cm; Measuring surface: 64 mm²; Weight: 65 g;
Measurement principle: photometric
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.

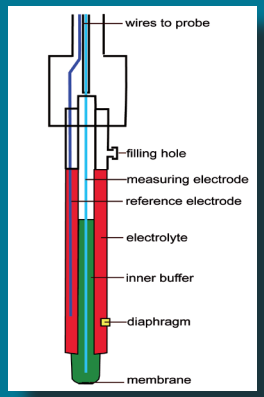
Fields of Application

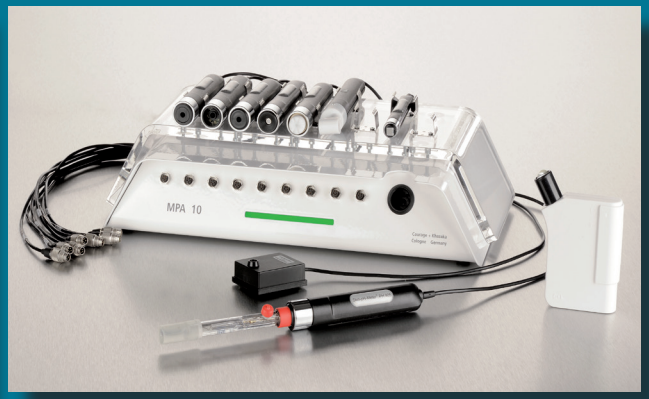
There are many fields of application where changes in skin pH are of interest.

- In **cosmetological and pharmaceutical** application fields for the development of home and personal care 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** (1 s) and reliable measurement avoiding occlusion effects.
- The probe head is **planar** for measuring on the skin surface.
- **Continuous** measurements over long-term periodes possible, e.g. for in-vitro applications.
- Display of the pH-value with one decimal.
- **Regular calibration** can easily be done by the user.
- Available for C+K **MPA-systems**, as standalone device (MDD) and wireless probe (operation with MPA Wireless software).





Technical Data
Dimensions: 22.8 cm, Measuring surface: Ø 1 cm flat; Weight: 130 g
Measurement range: pH 1,0 to pH 11,0, Measurement uncertainty: ± pH 0.1
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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 probe emits 3 specific light wavelengths. A receiver measures the reflection from the skin. As the quantity of emitted light is defined, the quantity of light absorbed by the skin can be calculated.

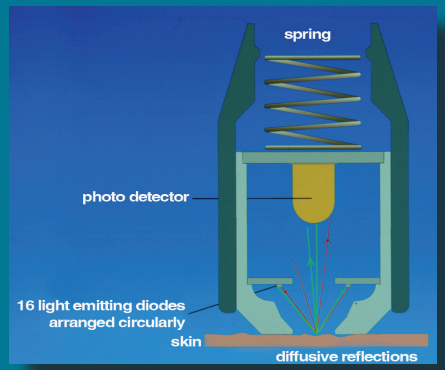
Fields of Application

There are countless 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, skin whitening and skin soothing products).
- In **occupational health** the skin irritation (erythema) is of special interest to educate the necessity of protection schemes.
- Other products, e.g. **foodstuffs** can also be tested.

Advantages

- The high quality electronics of the probe allow a **very quick** measurement.
- It is very sensitive to the **slightest changes** in skin colour.
- A spring in the measuring head provides a very low **constant pressure** on the skin.
- The **convenient handling** of the probe permits measurements at all body sites.
- Available for C+K **MPA-systems**, as stand-alone device (MDD) and wireless probe (operation with MPA Wireless software).



Technical Data (for probe with cable)

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
Measurement principle: reflection
Nominal wavelengths (peaks): green: 568 nm, red: 660 nm, infrared: 880 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?

For many years, the measurement of **elasticity parameters** with the Cutometer® Dual MPA 580 has been worldwide acknowledged as **standard method**. The Multi Probe 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 created by a vacuum pump within the device draws the skin into the aperture of the probe.
Inside the probe, the **penetration depth** is determined by a non-contact optical measuring system. It consists of a light source and a light receptor, as well as two prisms facing each other, projecting 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.

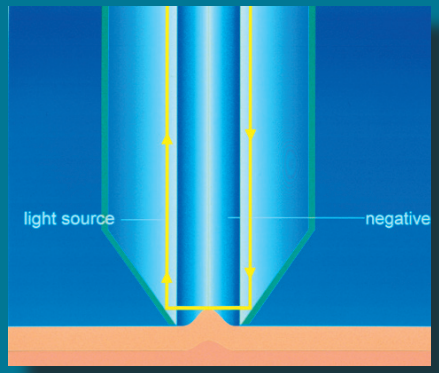
Fields of Application

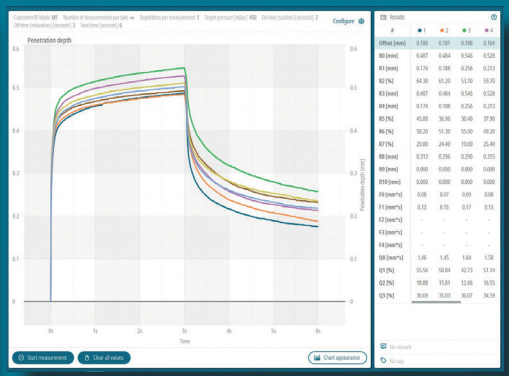
The measurement with the Cutometer® is used as standard in anti-ageing research and cosmetology.

- 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** (2, 4, 6 and 8 mm Ø) 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 **convenient handling** of the probe permits measurements at all skin sites.
- The probe head can **easily be cleaned** after each measurement.
- A multitude of **elasticity related parameters** can be calculated from the curves.
- Intuitive, **graphic explanation** of the various results.
- The settings in the programme are **very flexible** and can be adjusted according to different applications or **study layouts**.
- See the **live offset** at the start of each measurement for the control of pressure when doing **comparison measurements**.
- Export the results and curve data of a complete study directly to **Excel®**.
- Available solely as C+K **MPA system** to be operated with the overall **MPA CTplus software**.





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;
Measurement principle: suction
Units: µm penetration depth into the probe opening, expressed as curves
Technical changes may be made without prior notice.

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Parameters in the Software MPA CTplus

R-Parameters

- **R0**: Uf **pliability/firmness** mm (amplitude at the end of the suction phase.
- **R1/R4**: ability of the skin to **recover its initial state** (resi-dual deformation in mm at the end of recovery).
- **R2**: **visco-elasticity** in % (resistance to the mechanical force versus ability of recovery)
- **R3/R9/R10**: Tiring effects in mm (**Fatigue**) visible for re-peated suction/recovery circles.
- **R5**: **net elasticity** in %: Ur/Ue = elastic part of the suction phase vs. immediate recovery during relaxation phase.
- **R 6**: Uv/Ue **Portion of the visco-elasticity** of the curve during suction phase in %.
- **R 7**: Ur/Uf proportion of the **immediate recovery** com-pared to the amplitude after suction in %.
- **R 8**: Ua **Total recovery** after the pressure is cut off in mm.

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).

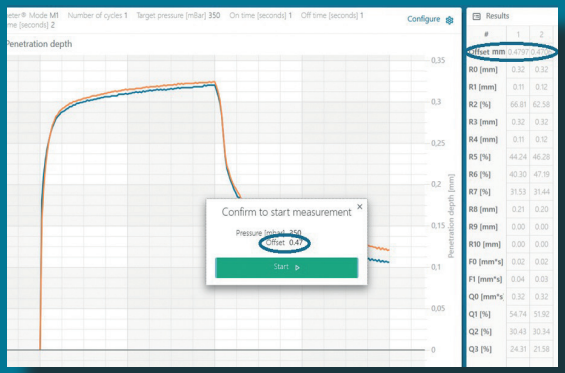
Q-Parameters

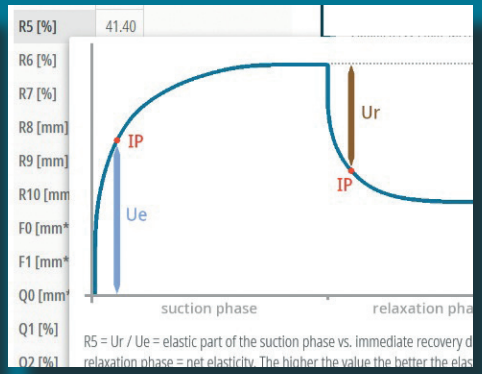
Correlations between **skin age and the elastic & viscous recovery** of the curves, developed by Dr. Di Qu*.

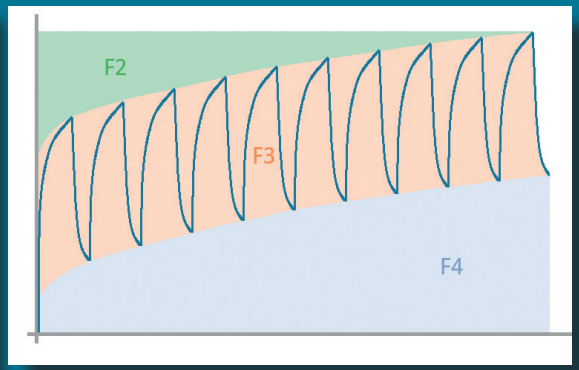
- **Q 0**: **Maximum recovery** area, will decrease with increased firmness of the skin.
- **Q 1**: **Total recovery** area, increases with higher elastic recovery.
- **Q 2**: **Elastic recovery**, increases with higher elasticity.
- **Q 3**: **Viscoelastic recovery**, age and treatment independent.

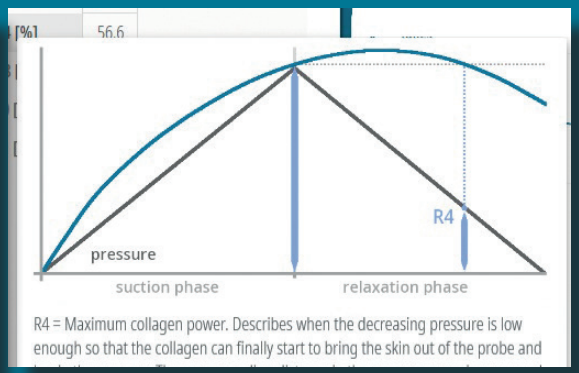
New Aging Parameters for Mode 2 and 3

- **R3** = maximum amplitude in mm: At the **end of the suction phase**, the skin does not start to leave the probe or even goes deeper inside, due to **loss of collagen**.
- **R4** = **maximum collagen power**: The distance in the pressure curve when the decreasing pressure is low enough for the collagen to bring the skin out of the probe in proportion to the maximum pressu-re.









Technical Data
Windows® 10; Screen resolution: minimum 1280 x 720, recommended 1920 x 1080; USB 2.0, 3.0;
CPU: Intel i3/i5/i7 3rd generation; AMD Phenom II X4, or higher; Optional dedicated graphics card for smoother curve visualization, RAM: 4GB. The software is license-based. Download it for a 10 days trial from our download section.
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 Hex (successor of the world-wide acknowledged Tewameter® TM 300) assesses the **Transepidermal Water Loss (TEWL)**, indispensable parameter for the evaluation of the water barrier function of the skin, with **utmost accuracy and reproducibility**.

The Measuring Principle

Water is constantly **evaporating** from the skin which is part of the important body's metabolism. The **amount of water** (TEWL) is expressed in g/h/m². **30 sensors** inside the hollow cylinder of the probe detect the **relative humidity and temperature** like a camera. The high amount of data allows the user not only to measure **inside the probe** with high accuracy, but can show results also for the areas right outside the probe, namely **skin surface and ambience** above the probe.Thus, **new, exciting parameters** (local skin energy balance and others) may give interesting insights in several research fields.

Fields of Application

- Indispensable in formulation, **efficacy testing and claim support** for cosmetics and pharmaceuticals, regarding improvement of the skin barrier function.
- **Safety tests** for products as even slight deficiencies in the skin barrier can be detected.
- Dermatological **basic research**.
- **Sweat studies** (anti-perspirant efficacy testing).
- **Patch Tests**
- Educative measurement in **occupational health** to alert people for the necessity of using skin protection products.
- **Veterinary medicine** and zoology.
- Also for the textile, food, packaging and paper/tissue **industry**, the measurement is of interest.
- **Local skin energy balance** is an exciting new parameter for different research fields: e.g. sports, nutrition & food supplements, textile, micro circulation, sleep medicine, special cooling products.

Advantages of Open Chamber Measurement

- Measurement of the TEWL **without any influences** of the micro climate of the skin (pressure, occlusion, temperature).
- **No waiting** time between the measurements.
- With the "open chamber" method of the Tewameter® TM Hex even **high water loss** values can be detected **accurately** as no water is collected inside the probe.
- Traceable, **elaborate calibration** of humidity, temperature and TEWL to g/h/m².
- Worldwide **most used** TEWL measurement method (even approved in **space**!*).
- Several hundreds of performed **studies** with the Tewameter® prove this fact.





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

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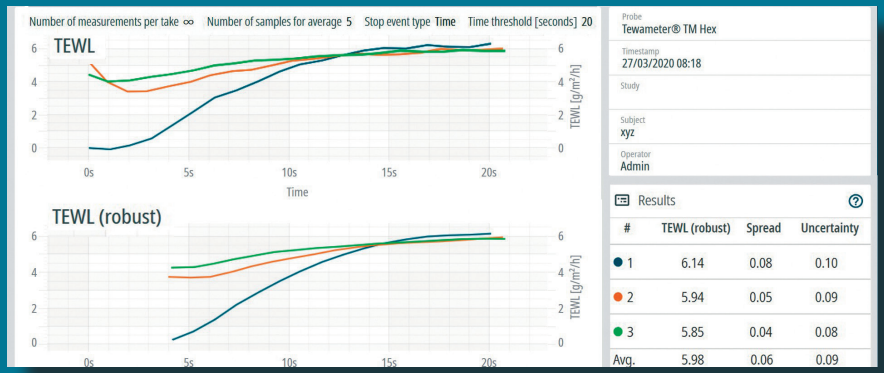
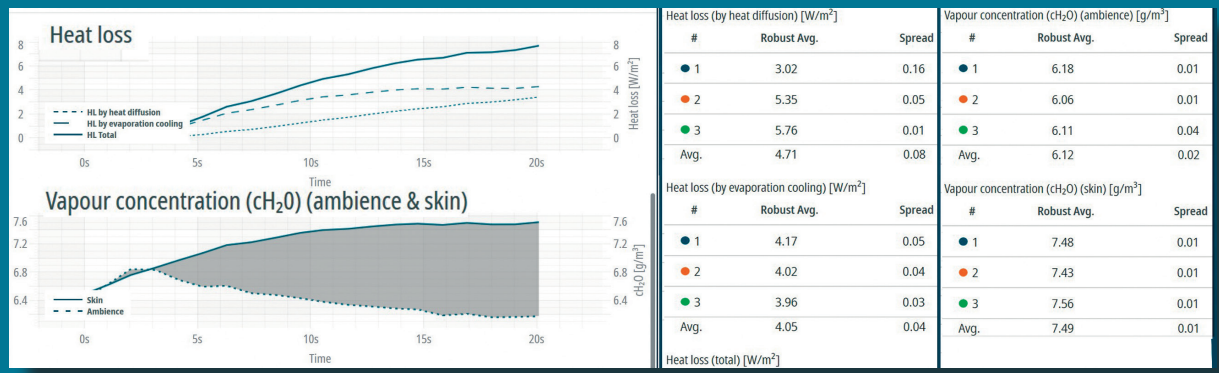
Advantages of Tewameter® TM Hex

- Extremely **accurate, quick and robust** measurement of the TEWL with the information of **30 sensor pairs**.
- A **very stable** measurement is achieved quickly within **20 seconds**.
- **Continuous measurements** over longer periods are also possible depending on the application.
- Due to the **high amount of measurement data**, the probe can detect the values **like a camera**.
- **Unobstructed view** to the measurement surface and **unobstructed evaporation flow**.
- **Robust sensor placement** in the wall inside the measurement head.
- Due to the high amount of collected data measurements not only inside the probe but also on top and below the probe (**ambience and skin surface**).
- **Check calibration** with its subsequent **zero offset** can be performed on a daily basis and will compensate "aging effects" to ensure the **high precision over time**.
- First probe with documented, extremely **low measurement uncertainty** visible for each single measurement value.
- **Perfect placing on the skin** is possible. The arrow on the probe head shows the direction of diffusion. A message in the software appears if the probe is put on upside down.
- **Hygienic cap** (disposable)
- Available for the C+K **MPA-systems** to be operated with the new convenient software MPA CTplus.

New Parameteras beyond TEWL

- **Local Skin Energy Balance**: Skin is constantly emitting energy (heat) in two ways: through **diffusion of warmed air** molecules on top of the skin and through **evaporation cooling**. For the first time these two can be recorded **separately** during a TEWL measurement. The measured values are expressed in W/m².
- **Water vapor concentration cH20 Skin & Ambience:** This parameter expresses the **absolute humidity** in g/m³. The difference between the value measured on the skin and in the ambience is the **actual drive** of the TEWL. In addition this parameter gives more details about the **measurement conditions** (e.g. atmospheric turbulences).
- In addition also **temperature & relative humidity** (RH) of the **skin surface and in the ambience** on top of the probe are measured.





Technical Data
Dim.: Measuring Chamber: Height: 2 cm, Ø 1 cm, Probe: Length: 17 cm, Cable length: 1.3 m, Weight: 75 g (incl. cable),
Measurement principle: "open chamber" measurement of evaporation gradient by 30 sensor pairs inside for temperature & RH;
Measurement repeatability (confidence interval 99 %): TEWL: ± (0.15 g/h/m² + 1.0 %);
Measurement uncertainty (max.): TEWL: ± (0.5 g/h/m² + 5.0 %); Operating conditions: T: 10-40° C, RH: 30-70 % RH
***Not available** for the Multi Display Devices (MDD) or as a wireless probe. In these cases you need a probe with **Tewameter® TM 300** technology.* *The technical data are preliminary and changes may be made without prior notice.*

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Tewameter® TM Nano

With its **ultra-small measuring chamber** (only 2 mm Ø), the Tewameter® TM Nano allows to measure the Transepidermal Waterloss (TEWL) in g/h/m² on small, or difficult to reach sites, e.g. **nails, scalp with hair, lips**, etc.

- **Special rubber rings** make the probe sit tightly even on slightly curved surfaces (e.g. the nails). As they are exchangeable, the rings can be **cleansed hygienically**.
- Available for the C+K **MPA-systems** (operation with MPA CTplus software).

Tewameter® Triple TM 330T

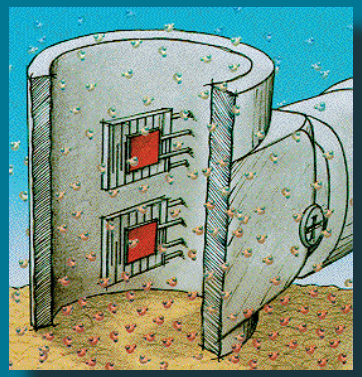
The probe follows the worldwide acknowledged **open chamber** measurement of the **Tewameter®**. It measures the gradient of the water evaporation from the skin indirectly by the two pairs of sensors (temperature and relative humidity) inside the hollow cylinder. A microprocessor analyses the values. It is very suitable device to reduce the measuring time as with its **three probe heads** it supplies three measurements **at the same time**.

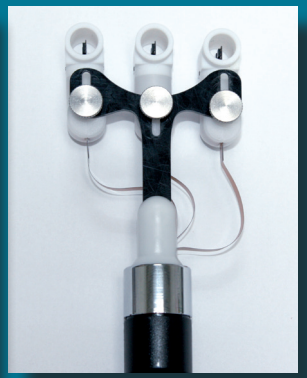
- Possibility of measurement of **one large area** with higher precision and reproducibility
- or time saving on **three areas** with different products at the same time and exactly the same ambient conditions.
- Software shows the values of all three probe heads simultaneously. The values can be viewed as **single values or as average**.
- The probe heads can easily be positioned on the skin with **high flexibility**.
- Innovative 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.
- Available for C+K **MPA-systems** (operation with MPA CTplus software).

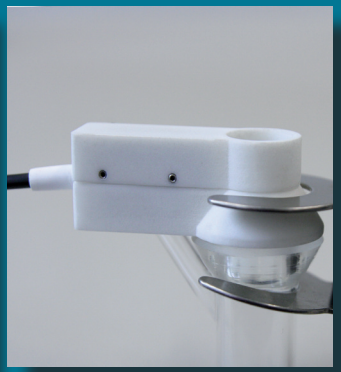
Invitro Tewameter® VT 310

A special probe for the measurement of the TEWL, perfectly suited to fit on a **Franz cell**. The probe emulates completely the upper part (donor chamber, standard is 15 mm Ø, other sizes on request). A convenient way to study **skin permeability and dermal absorption** necessary for safety & efficacy testing.

- Offers all advantages of the open chamber measurement of the Tewameter®.
- Fully **comparable to in vivo** measurements as the results are expressed in g/h/m².
- **Long-term** measurements possible.
- If **preparations** are applied to the membrane during the measurement, a special **Teflon centerpiece** emulating the donor chamber can be put between probe and membrane.
- Available for the **C+K MPA-systems** (operation with MPA CTplus software).





***Technical Data*:**
Tewameter® TripleTM 330T: Dim.: 3 measuring chambers: 2 cm, Ø1 cm, Probe: length 24 cm, minimum width 6.4 cm, Weight: 120 g, Cable length 1.3 m
Invitro Tewameter®: Dim.: 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)
Tewameter® TM Nano: Dim.: Measuring Chamber:2.3 cm high, Ø 2 mm, total contact surface: 4 mm Ø, Probe:15.3 cm, Cable length: 1.3 m, Weight: 90 g; Resolution & Measurement uncertainty for all probes: Please see website; Technical changes may be made without prior notice.

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Introduction

The Tewitro® TW 24 is the only device to measure the water evaporation from **cultured tissue sets** (wells in a plate with medium) in up to 24 wells simultaneously with the worldwide most used **open chamber** measurement of the **Tewameter®**.

The Measuring Principle

The Tewitro® TW 24 can be used in up to **24 wells plates** (6x4). Each measurement inlet features two sensor pairs constantly measuring **temperature and relative humidity**, thus measuring in an indirect way the gradient of the water evaporation from the surface of the bottom of the well. This gradient equals the Transepidermal Water Loss typically measured on the in vivo skin surface in **g/h/m²**.

Fields of Application

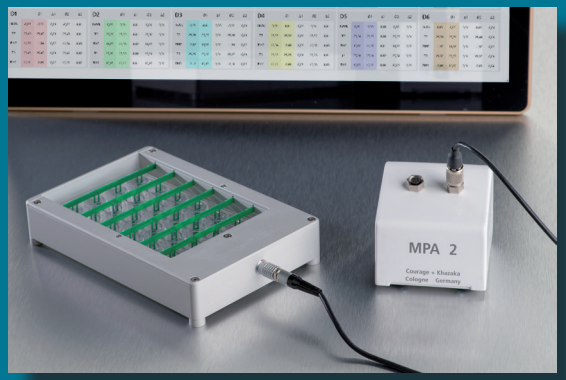
For each product to be applied to the skin, **safety measurements** are indispensable. The use of cultured cells sets for long-term safety tests is a quick and easy method to **avoid using animals or volunteers**.

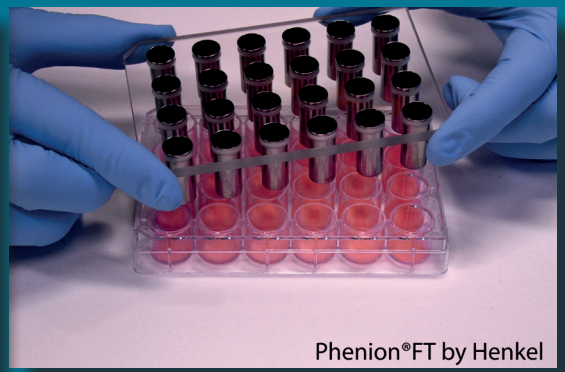
- Only way to study skin permeability and dermal absorption necessary for **safety and efficacy testing**.
- Well established in different **guidelines** around the globe and approved by institutions such as **ECVAM** (European Centre for the Validation of Alternatives to Animal Testing).

Whenever the barrier is damaged, the evaporation rate will increase immediately. Also for claims related to **barrier improvement/enhancing, tests** on cultured cells are needed, as products meant to keep the barrier intact or to even improve it, can be detected by a stable Transepidermal Water Loss (TEWL).

Advantages

- All values and **results of each sensor** are clearly represented in the convenient software.
- The probe can constantly measure over **longer periods**.
- The software indicates that the TEWL has reached a **stable threshold** value.
- You can be sure to apply the tested products in repeated tests to cell cultures under the **same conditions**.
- **Control value** of all wells used is recorded before application, so that the later measured effects can be surely attributed to the product.
- Extremely **time- and manpower-saving**.
- The probe features **6 slots with 4 measurement inlets** each, but is also available as single rows of 1 slot with 4 measuring inlets (respectively for 8, 12, 16 or 20 inlets), depending on the used well plate size.
- Suitable for **Epiderm®, Episkin®**. Please ask for **other adaptations**.
- The **Tewitro® TW 24R** for TEWL measurements on full thickness **reconstructed epidermis** (e.g. Phenion®FT by Henkel).
- Available for C+K **MPA-systems** (with Tewitro® software).





Technical Data

Dimensions: 113 (W) x 170 (L) x 32 (H) mm, weight: 300 g, cable length: approx. 1.20 m, frame material: anodized aluminum (AlMg 3), power consumption: max. 12 V; In full equipment: 24 sensor pairs (48 single sensors)
Measurement range: Temperature: 0 - 50° C, resolution: typ. 0.015 °C, RH: 0% - 100% RH, resolution: typ. 0.01 % RH, TEWL: 0 to 320 g/h/m²; Measurement uncertainty: for 20-50°C and RH ≤ 80%: typ. ± 1.5% RH, max. ± 2% RH, typ. ± 0.1°C, max. ± 0.3°C; Operating conditions: T: 5-40° C RH: 30-70 %
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. When the emitted light hits the skin surface, it is partly reflected and partly scattered. A small proportion travels into the skin and is scattered by the deeper layers. The l**ight 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.

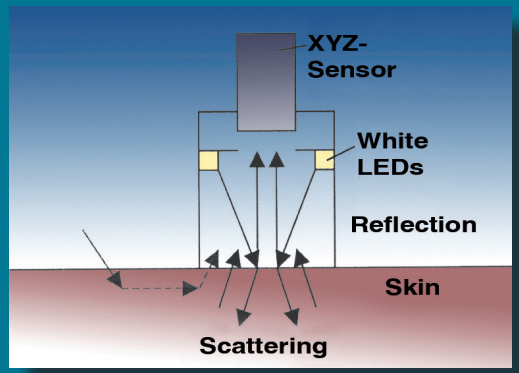
Fields of Application

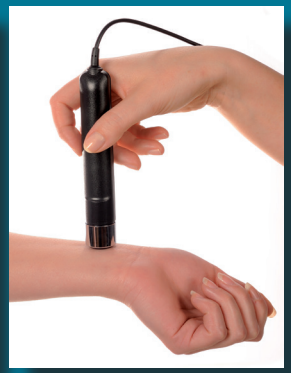
The probe has been developed especially for the needs of measuring changes in the skin color.

- 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-systems**, as stand-alone device (MDD) and wireless probe (operation with MPA Wireless software).





Technical Data (for probe with cable)

*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).*
Measurement principle: reflection, 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 surfaces 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 via a mirror **directly reflected light**, the other measures the **diffuse reflected** light vertically above the skin 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.

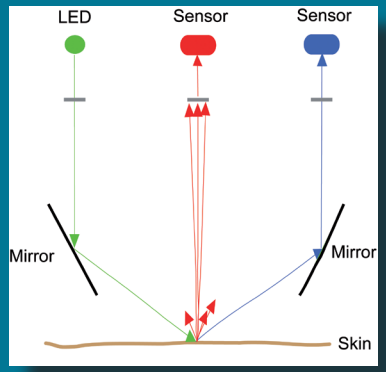
Fields of Application

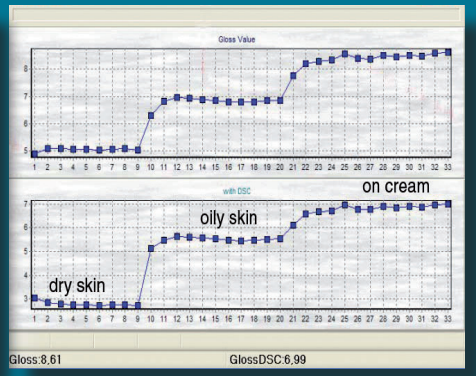
There are many applications in the R&D departments of the cosmetic industry where gloss is of interest.

- 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 f**acial 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.
- Special **hair clip** for measurements on hair.
- Available for C+K **MPA-systems**, as stand-alone device (MDD) and wireless probe (operation with MPA Wireless software).





Technical Data (for probe with cable)

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%, Measurement principle: reflection
Technical changes may be made without prior notice.

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What Does It Measure?

The Frictiometer FR 700 is a quick and useful tool to measure the **differences in friction on the skin** in correlation to skin properties or products applied to the skin.

The Measuring Principle

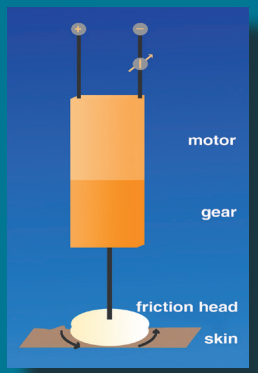
The probe contains a motor, a steering unit and the friction head. A constant rotational speed (adjustable to different speeds) is applied onto the skin by the smooth teflon friction head. The **torque** is measured and the result is displayed as Frictiometer units.

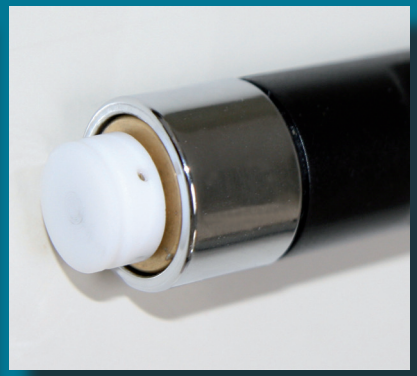
Fields of Application

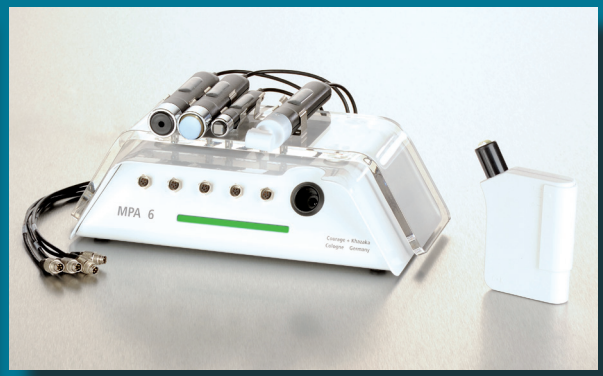
- With the Frictiometer it is possible to assess **skin surface properties**: e.g. normal, dry, rough or scaly skin as well as skin with or without wrinkles will show different values.
- For **testing of skin care products** making the skin smoother, leading to lower Frictiometer values. Different formulations will also show different values. W/o emulsions decrease the frictionary resistance more than the o/w emulsions.
- **Effects of textiles and paper tissue** products on the skin can be evaluated (e.g. diapers, paper handkerchiefs, toilet paper etc.). For testing, the material is pulled over the friction head and fastened. The higher the frictionary resistance, the higher is the irritation potential on the skin. It is possible to study e.g. the effects of untreated tissues on the skin in comparison with tissues treated with 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 paper tissues can be determined with other C+K testing methods e.g. the erythema with the Mexameter®.
- Available for C+K MPA-systems and as stand-alone device (MDD).







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 %
Measurement principle: torque
Technical changes may be made without prior notice.

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C+K electronic

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**.

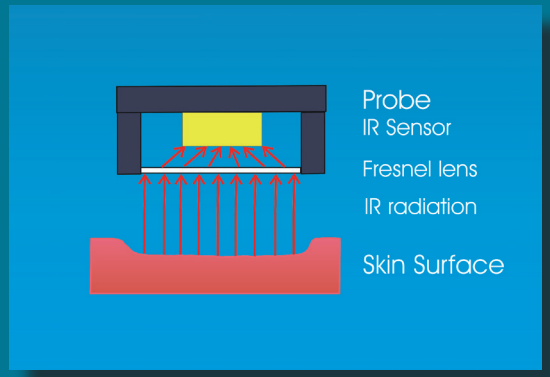
Fields of Application

The probe can be employed 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 pharmaceuticals (e.g. microcirculation enhancing liniments).
- Ideal as **accompanying measurement** for the assessment of other parameters, e.g. skin hydration will change considerably with increasing skin temperature.
- 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 probe measures **without contact**, thus not influencing the microcirculation.
- The modern, high quality electronics of the probe allow a **very quick** measurement (1s).
- The **easy to handle** probe is perfect for the measurement on all body sites.
- **Continuous** measurements possible.
- Available for C+K **MPA-systems**, as stand-alone device (MDD) and wireless probe (operation with MPA Wireless software).



Technical Data (for probe with cable)
Dimensions: 13.5 cm; Weight: 85 g incl. cable; Measuring surface: Ø 2.4 cm; Measurement range: 22 - 40°C;
Measurement uncertainty for absolute temperature measurements: ± 0.8° C,
Repeatability of temperature measurements: ± 0.15 K (3σ),
Measurement uncertainty of temperature differences: ± 0.21 K (3σ); Measurement principle: infrared
Technical changes may be made without prior notice.

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electronic

What Does It Measure?

The Indentometer IDM 800 is a quick, easy and economical tool to look at the **skin softness/stiffness**.

The Principle

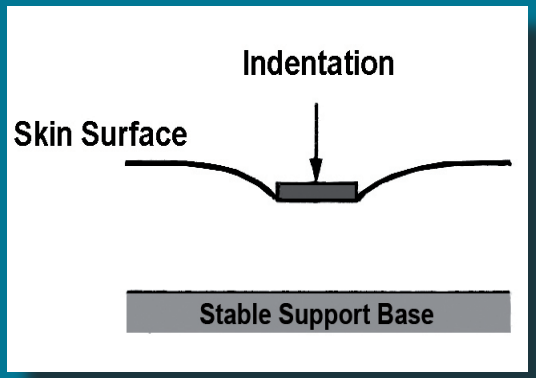
The measurement principle is based on the **force** (by a spring) used on the small indenter of the probe to deform the skin. The device measures how the probe indenter displaces the skin. The **penetration depth of the pin** (displacement) is measured in mm (0-3 mm). The firmer/stiffer the skin, the less deep is the displacement by the pin.

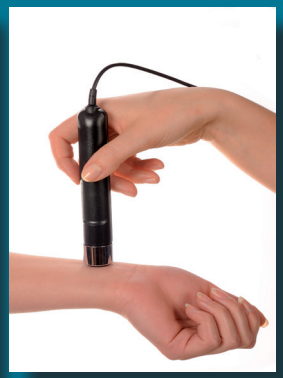
Fields of Application

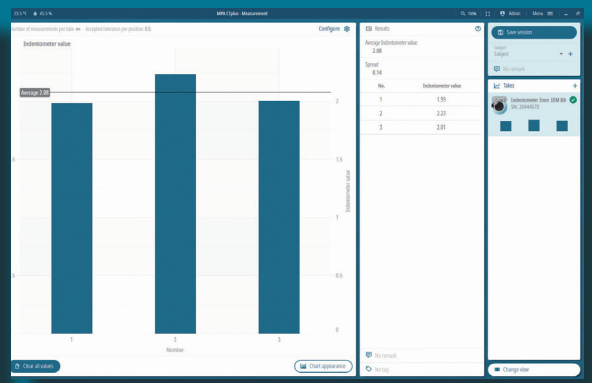
- **Efficacy testing and claim support** (especially for firmness enhancing products for skin or scalp or anti-aging).
- Important in **dermatological research** of different skin diseases (e.g. scleroderma, etc.).
- **Clinical research** in wound and burns medicine.
- Clinical research of other medical fields e.g. gynecology, pathology and others.
- Measurement on **different surfaces** is possible (e.g. textiles, plastic, food and many more).

Advantages

- **Easy to use** and quick results.
- Perfect **addition to other elasticity measurement** approaches (e.g. Cutometer®, etc.).
- Probes with **3 different pin Ø** (2, 3 and 5 mm Ø) are available, suitable for various skin sites. The smaller the diameter (small contact area with the skin), the deeper the pin will go into the skin when using the same force.
- A special shaped probe for the firmness **measurement of the scalp** is available (pin 1 mm Ø).
- The depth of the pin can be checked any time easily and quickly with a **check calibration** tool.
- The probe head can **easily be cleaned** after each measurement.
- Available for C+K **MPA-systems**.







Technical Data
Dimensions: 14 cm, Cable length: approx. 1.3 m, Measuring pin: Ø 1 (only for scalp), 2, 3 and 5 mm, Weight: approx. 75 g
Measurement principle: vertical displacement of the skin by a pin (in mm), Measurement range: 0-3 mm (2 decimals),
Resolution: 50µm, Measurement uncertainty: ±0.075 mm
Measurement principle: indentomety
Technical changes may be made without prior notice.

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2020-10

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 graphic 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**. On the 18.0 x 12.8 mm silicon chip of the sensor, over 90,000 capacitors are located. 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. With a special image analysis software the image can be evaluated in different ways.

Fields of Application

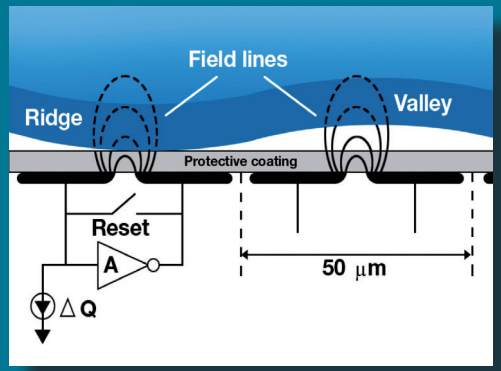
Wherever moisture distribution plays a role, the MoistureMap MM 100 is an ideal imaging addition to the purely quantitative measurements.

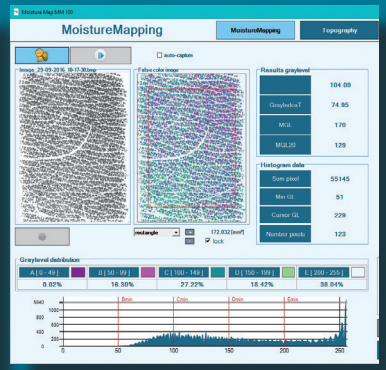
- **Efficacy testing** of cosmetics & pharmaceuticals & surfactants
- Sun damage and **illustration** of skin lesions and scars.
- To map the **hair moisture level**

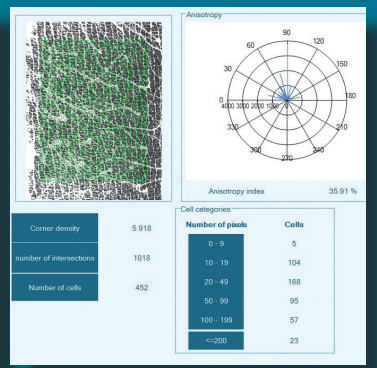
Advantages

- 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
- **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.
- **Evenness** of the hydration is displayed in 5 different colours and a histogram.
- 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
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2020-10

What Does It Measure?

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

The Measuring 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 the applied pressure is released 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 calculated, offering interesting measurement parameters. Each direction in the graph provides 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.

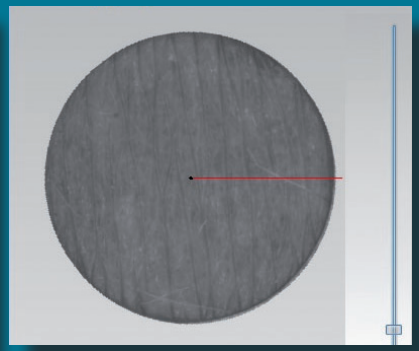
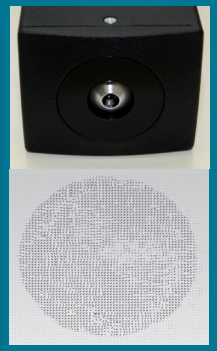
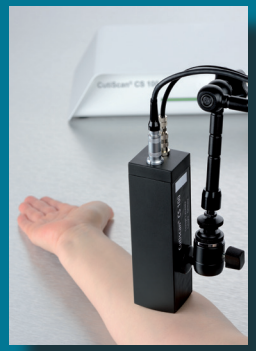
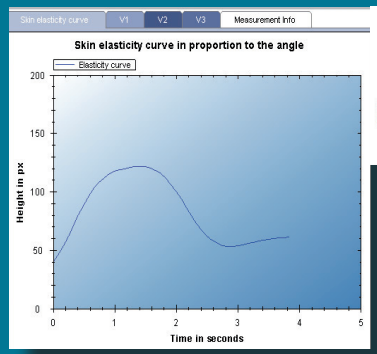
When looking at the skin **displacement in all directions**, it becomes obvious that in some directions the displacement and the returning rate are higher than in others depending on the linearity of the skin (**anisotropy**).

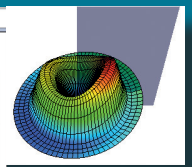
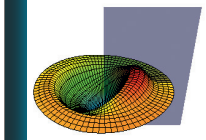
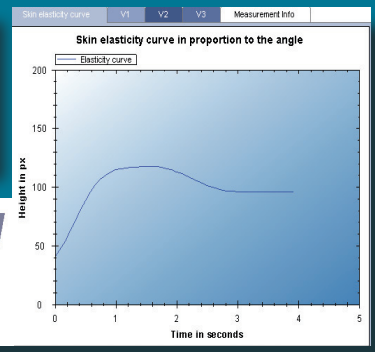
Fields of Application

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

Advantages

- Completely new and **promising approach**.
- Information not only about the elastic & viscoelastic properties but also on **directionality** of the skin (anisotropy).
- For each measurement a **complete video** is taken and saved.
- From this video, a graph consisting of **360 elasticity curves** is calculated. All curves can be saved in Excel®.
- Overall **measurement graphs** are available for maximum and minimum amplitude as well as for the distribution of 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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2020-10

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 a 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.

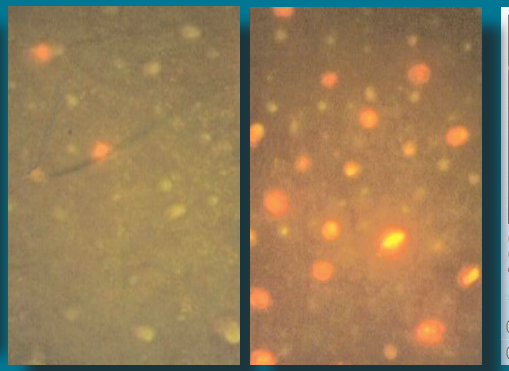
The **presence of porphyrins** can be demonstrated by orange-red fluorescence in the follicle openings by examining the skin under appropriate UV-A light. The intensitiy of follicular fluorescence and the extent of facial involvement are proportional to the population densitiy of P. acnes and porphyrin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

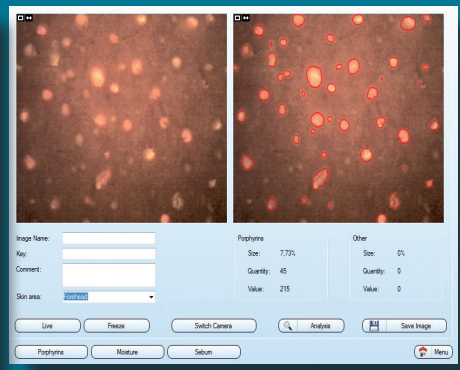
An improvement of acne is accompanied by significant reduction of the porphyrin concentration and the number of P. acnes, respectively.

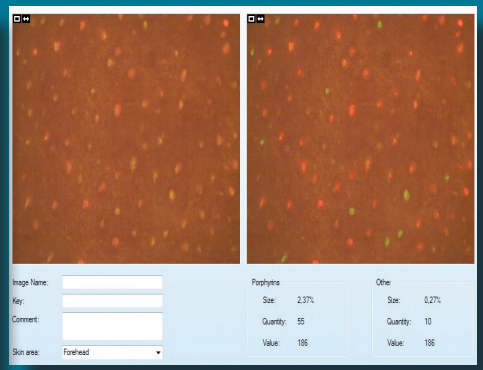
Advantages & Fields of Application

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

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
Interface/Power supply: USB 2.0, type A connector;
Measurement principle: fluorescence
Computer: Windows® 10, performance must meet system requirements, USB 2.0; 3.0
Technical changes may be made without prior notice.

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2020-10

What Does It Measure?

The Visioscan® VC 20plus is a unique **LED UV-A light video camera** with high resolution to study the skin surface directly. The images show impressively the **structure of the skin** and the level of dryness/scaliness on the skin. With its multi-functional software, the Visioscan® VC 20plus is a very flexible system to characterize skin surface condition easily, accurately and very economically.

The Measuring Principle

The camera features a **high resolution b/w video sensor and a LED UV-A light** source with circular diffusor for uniform illumination of the skin. **Autofocus** function is provided by the liquid lens system.

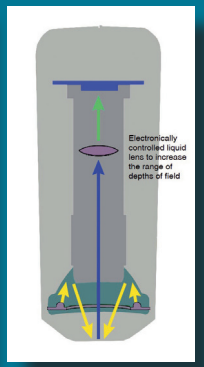
Fields of Application

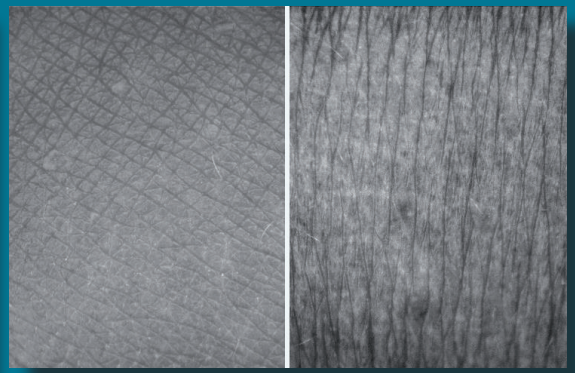
- **Efficacy testing & claim support** for cosmetics, pharmaceuticals and detergents, regarding skin roughness and microtopography.
- Typical claims: e.g. improves **skin texture**, anti-ageing, wrinkle smoothing, fighting dry skin.
- Dermatological **basic research**.

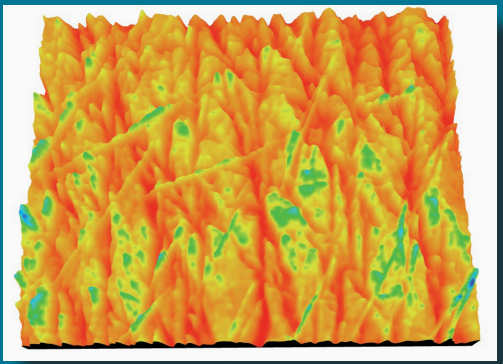
Advantages

The new Visioscan® generation with improved hard- and software offers a multitude of possibilities:

- Very sharp, **high resolution** & non-glossy images due to special LED UV-light and diffusor.
- Electronically controlled lens (autofocus) for **maximum depth of focus**.
- **Easy handling** of the ergonomic camera and the comfortable software.
- Worldwide established method used in **many studies**.
- A **check calibration function** ensures the accuracy of geometry of the camera.
- Quick and easy display of **"3D" images** in false colour or grey values.
- The extremely **economic** system can easily compete with the more expensive, complex devices.
- **Convenient organisation** of images and results in studies. Evaluation of all data together by one click.
- Easy **filter and export functions** of data to Excel® are integrated.
- A Visioscan® based system was even used on the **ISS in space** (Study by DermaTronnier, instruments verified for space by Kayser-Threde GmbH on behalf of the DLR space travel management).
- The Visioscan® VC 20plus can be combined with the **Skin Visiometer® SV 700**.







Technical Data

Dimensions: 12.6 x 5.8 x 5.0 cm; Weight: 230 g; Image size: 10 x 8 mm; Sensor resolution: 1/2» B/W CMOS-sensor 1.3 MPix (1280x1024 pixels); Light source: UV-A LED approx. 390 nm (no hazard for normal human skin); Objective 20 mm; f/2.8
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
Measurement principle: optical, reflected light from skin

Technical changes may be made without prior notice.

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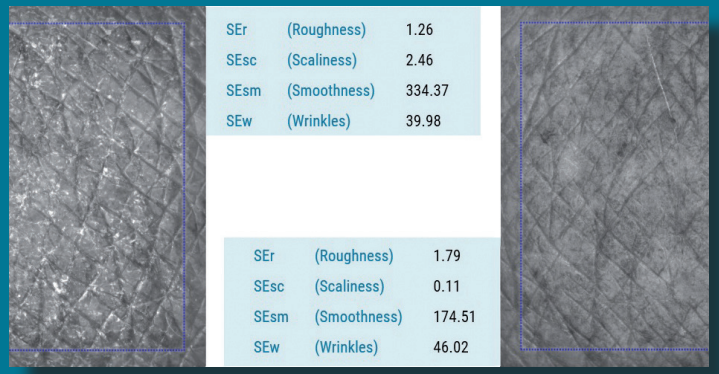
Software & Parameters

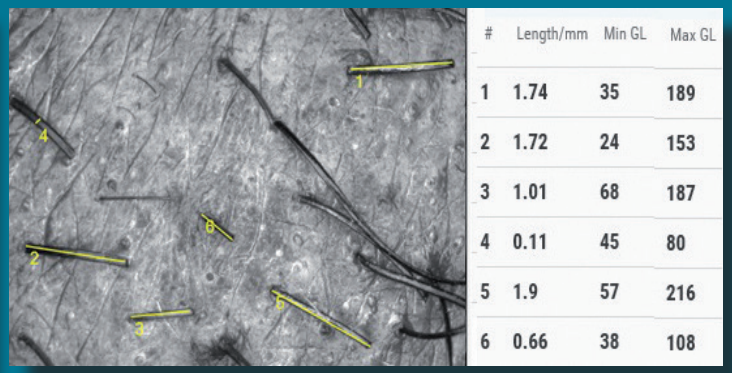
The camera system is connected to the computer by USB. A variety of interesting parameters can be determined:

- The evaluation method **SELS®** (**S**urface **E**valuation of the **L**iving **S**kin - developed by the Institute for Experimental Dermatology, Prof. Tronnier, University of Witten-Herdecke, Germany) analyses the grey level distribution and allows the calculation of **four clinical parameters** to quantitatively and qualitatively describe the skin surface as an index:

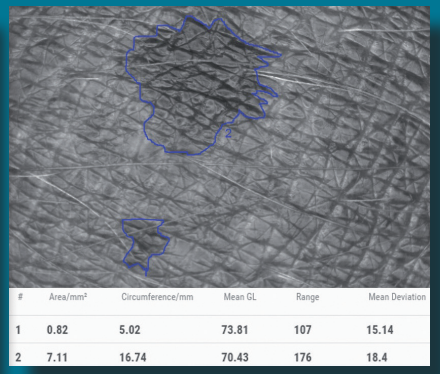
  Skin smoothness (SE_{sm})
  Skin roughness (SE_r)
  Scaliness (SE_{sc})
  Wrinkles (SE_w)

- For **topographic measurement** according to DIN, lines are drawn on the images and the profile and the results are shown directly. Roughness indices for up to 180 lines arranged vertically, horizontally or circularly are immediately available.
- To describe virtually the skin topography **volume (mm²) and unfolded surface in %** special parameters were created.
- **Ageing parameters** such as anisotropy (directionality of the lines) and cell size (closed polygones between the visible lines) are at your disposal.
- **Lines and free-hand objects** can be drawn in the picture. They **can be measured** accurately (e.g. length of hair after shaving, hair thickness, pigmented spots and lesions, etc.).
- Evaluation of **desquamation** (scaliness/dryness) of the skin with the foil Corneofix® F 20. A desquamation index is calculated.
- Determination of **sebum production** with the foil Sebufix® F 16. The sebum production of each sebum gland can be monitored impressively in real time on the screen. The sebum spots are evaluated by size and number. During the measurement a gradient for the sebum production is displayed.
- Images with **all results** are shown side by side.

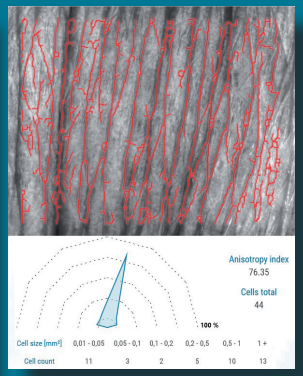




#	Length/mm	Min GL	Max GL
1	1.74	35	189
2	1.72	24	153
3	1.01	68	187
4	0.11	45	80
5	1.9	57	216
6	0.66	38	108



#	Area/mm²	Circumference/mm	Mean GL	Range	Mean Deviation
1	0.82	5.02	73.81	107	15.14
2	7.11	16.74	70.43	176	18.4



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What Does It Measure?

The Sebufix® F 16 is a **special foil absorbing the sebum** of the skin surface by its micro pores. The sebum on the foil is visible as spots of different sizes.

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.

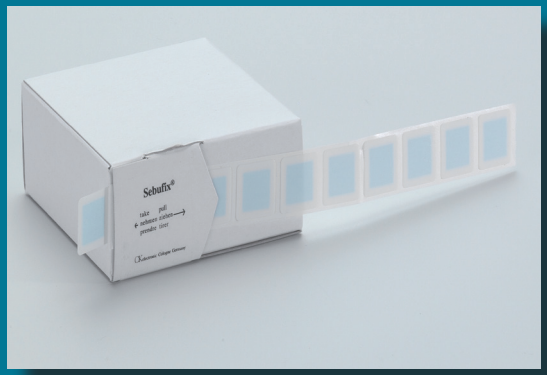
Fields of Application

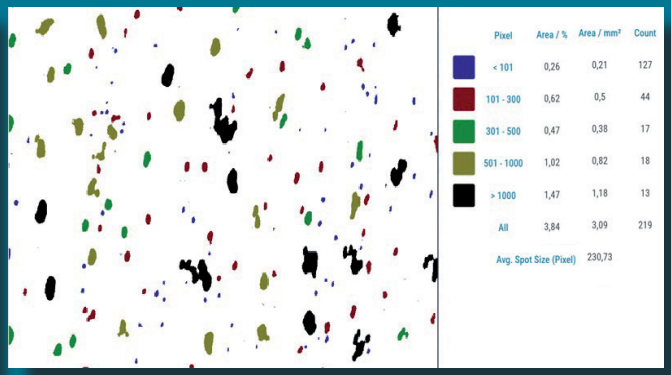
In addition to the well established quantitative measurements with the Sebumeter®, Sebufix® F 16 offers a more **qualitative approach** towards skin sebum.

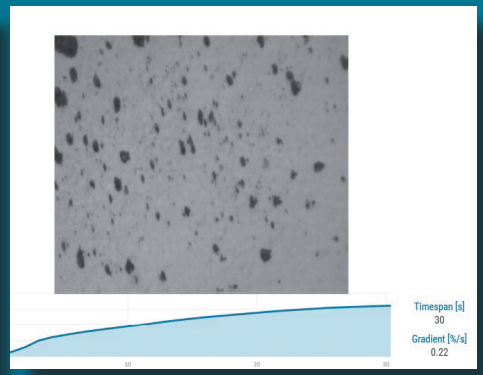
- It is a very helpful tool for investigating the **activity** of the sebacious glands.
- In cosmetology for f**ormulation and efficacy testing**, the sebum level of the skin is one of the most important parameters.
- Especially suitable for the field of cleansers, anti-acne skin care, **cosmetics for 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 classes 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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2020-10

What Does It Measure?

The Corneofix® F 20 is a special foil **collecting corneocytes** (flakes of dead skin cells). The number, size and thickness of the corneocytes on the foil indicate the **desquamation/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 on the foil.

The Measuring Principle

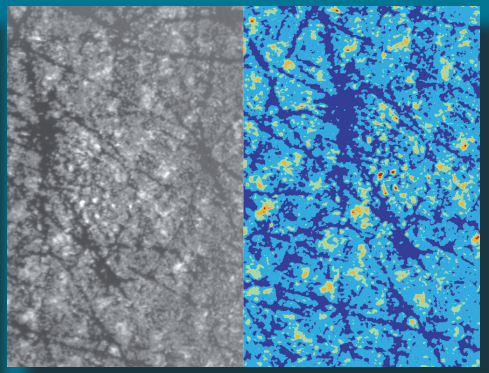
The adhesive side is applied to the skin area to be measured. On removing the tape from the skin, the corneocytes **stick to the tape**.

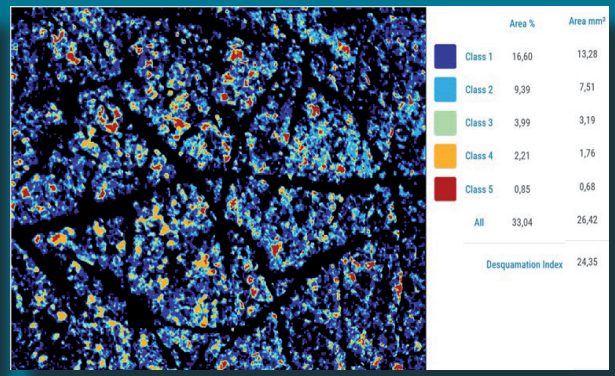
Fields of Application

- 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 the perfect addition to the **Visioscan®** skin camera or the **Visiometer®**. With the software the number, size classes 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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electronic

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 **relief of the skin as a negative**, i.e. wrinkles are higher in the replica, absorbing more light, 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**). As the three-dimensional coordinates are known, the **depth of each pixel** can be calculated in µm by the special software.

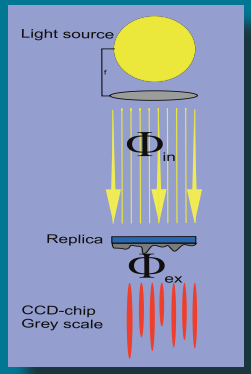
- With this method various **skin parameters** can be calculated within one second.
- **Lines can be drawn** on the images and the profile and the results are shown immediately.
- Calculation of **standard roughness parameters** Rt, Rm, Rz, Rp and Ra for up to 180 lines (drawn vertically, horizontally or radially 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 .

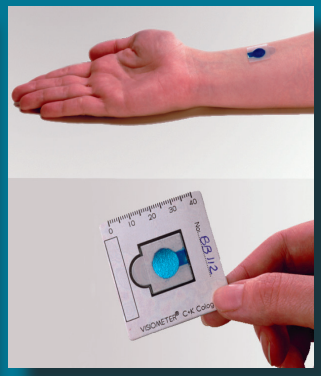
Fields of Application

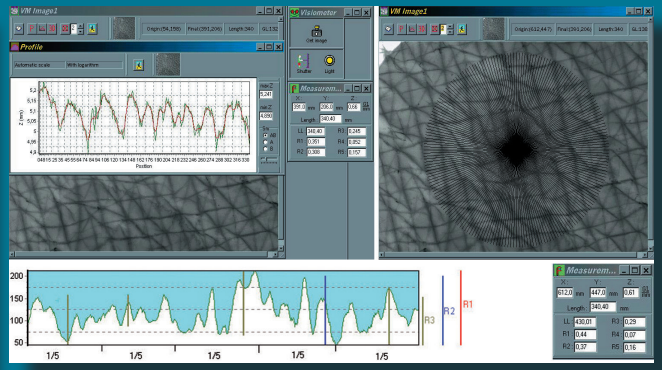
Exact, easy-to-handle and economic system for the R&D laboratories or the test institutes for **efficacy testing of anti-aging products**.

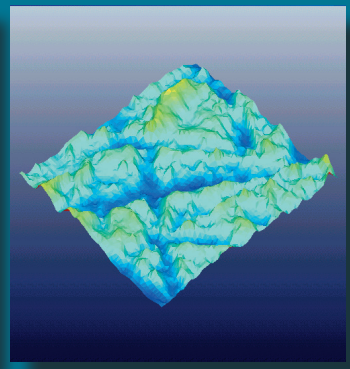
Advantages

- 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 Excel®.
- Easy and quick **calibration** of the system.
- The skin camera **Visioscan® VC 20plus** 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®10, performance must meet system requirements, USB 2.0; 3.0
Measurement principle: optical, transmitted light through replica 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

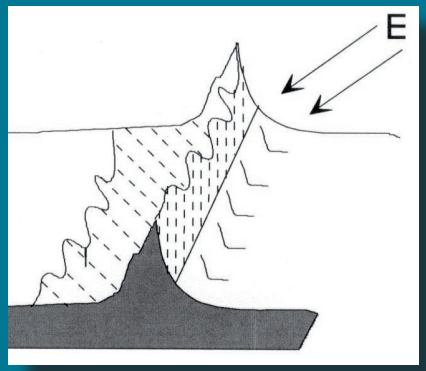
The measurement is based on **skin replica and oblique lighting**. The replica is illuminated at an angle of 35° and the mountains representing the wrinkles of the skin produce measurable shadows. They are digitalized by a **high resolution** camera mounted vertically to the replica and serve as a basis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

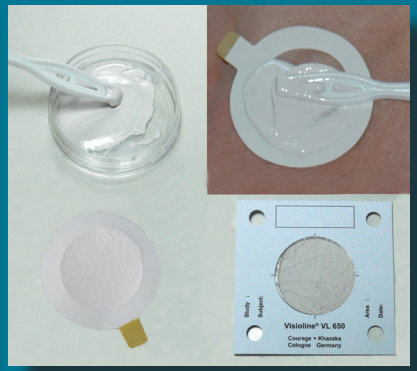
Fields of Application

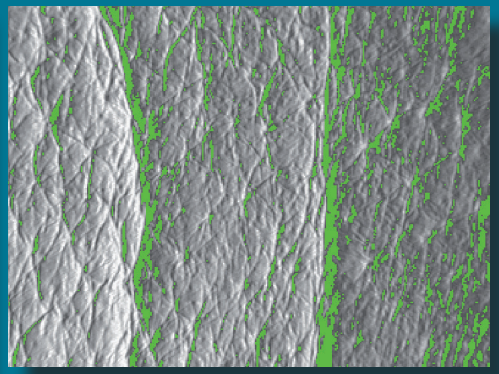
- This economical system is indispensable in **efficacy testing and claim support** for cosmetic anti-wrinkle products.
- Perfect tool for **multicentric studies**, as the replicas can be collected over a long time in different places and then be evaluated together.

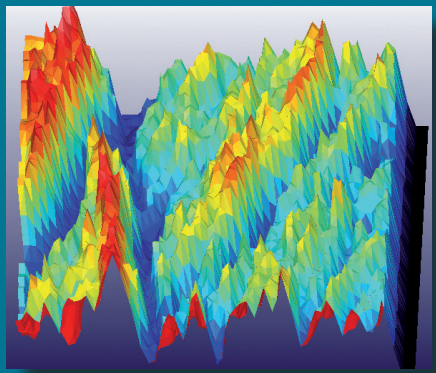
Advantages

- **Easy to make replicas** in all sizes from 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® 10, performance must meet system requirements, USB 2.0
Measurement principle: optical, reflected light from replica

Technical changes may be made without prior notice.

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2020-10

What Does It Do?

The VisioFace® RD and its software have been developed in cooperation with our French partner 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.

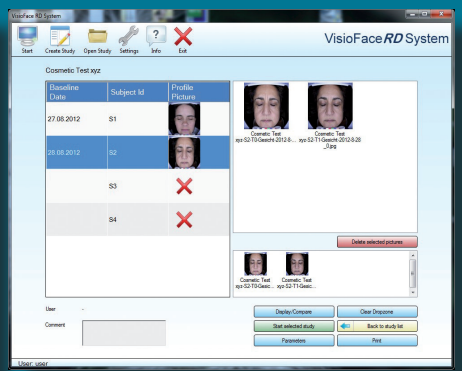
Fields of Application

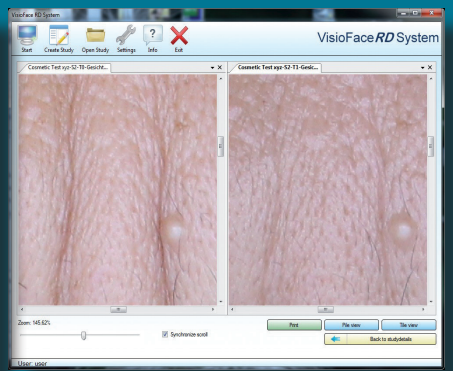
Ideal device for

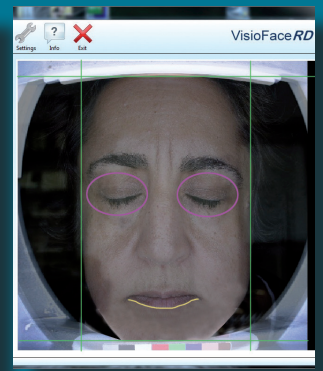
- treatment **documentation**
- performing **efficacy** studies
- image **comparison** over a long period

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®10, performance must meet system requirements, USB 2.0, 3.0
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2020-10

What does it measure?

For the first time, objective, **highly accurate measurements on the nail** are possible in vivo.
In collaboration with Prof. Paola Perugini from the University of Pavia in Italy, we have developed a patented device to analyze mechanical properties of nails, such as firmness, elasticity and thickness.

The Measuring Principle

The nail is placed on a support in the unit. A high precision load cell measures constantly the pressure required to step down the special applicator. The **force needed for the deflection of the nail** is displayed in real time. As soon as the head touches the surface of the nail the pressure increases. The result is a curve of force and distance (force deflection diagram). Its **slope** is depending on the mechanical properties of the nail. There are three different applicator sets for the measurement of:

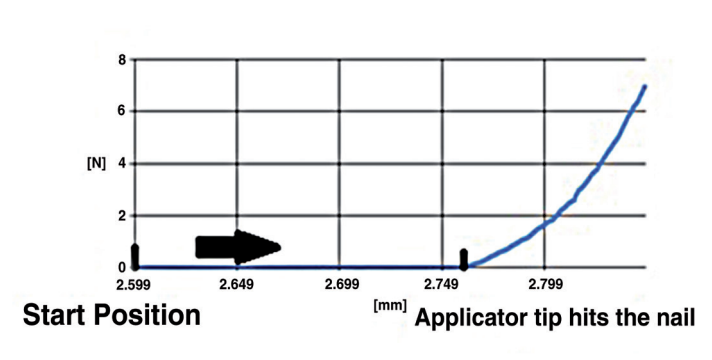
- Transversal deformation: the nail is deflected vertically. The slope of the curve indicates the **elastic property of the complete nail**. The result is the flattening index for the nail.
- Resistance to compression force: the nail is deflected punctually. The slope of the curve indicates the **structural strength/ firmness** of the nail. Also the **thickness** of the nail can be assessed.
- Longitudinal deformation: the nail is deflected horizontally. The slope of the curve indicates the **elasticity of the distal edge** (border) of the nail. The result is the bending index for the nail.

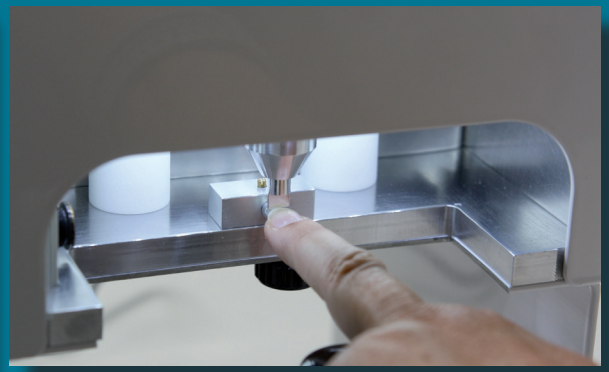
Fields of Application

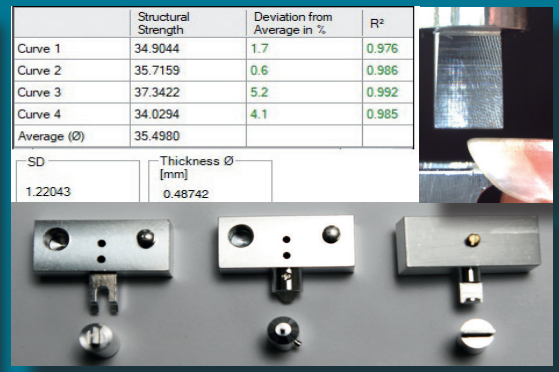
- **Efficacy tests** for all kind of nail care products and formulations.
- Create innovative **product & marketing ideas**.
- Clinical research of **nail disorders** as well as other skin diseases presenting nail changes and the quantification of therapies.

Advantages

- Very **easy handling** and convenient software.
- Measurement is absolutely **pain-free**.
- Several **safety** and comfort features.
- A variety of settings (pressure force, down step size of the applicator, measurement time, etc.) to meet **individual applications**.
- Positioning the nail is very easy, as it is constantly **monitored by a built-in camera** from the side.
- Ghost image of T0 as an overlay to aid **perfect positioning** for optimal reproducibility.
- The applicator heads can be moved down in very **small adjustable steps** (precision of 0.1 µm).
- Highly accurate values with **good reproducibility**.
- **Quality measures** of the curves (R^2 and deviation) to check the measurement immediately.
- Study based simple and quick evaluation of the results in **statistical programmes** possible.







Technical Data
Dimensions: 51.0 (H) x 20.5 (W) x 19.2 (D) cm, Weight: 10.4 kg, Power supply: external 100-240 VAC, 47-63 Hz, DC 12V/9A, Port: USB 2.0, type B connector, Consumption: during measurement approx. 0.3 A, Internal illumination by 18 white LEDs Distance measurement: max. 10 mm ± 0.02 mm, steps from 1 to 10 µm, measurement uncertainty: 30-70 µm for load of 10 N Load measurement: high precision load measurement cell, measurement range 0 – 10 N, measurement uncertainty: ± 0.02 N ± 2% of the respective load value, camera to monitor nail position: built-in, 5 MPixel USB color camera, resolution: 2592 x 1994 Pixel, Computer: Windows®10, USB 2.0 or 3.0
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2020-10

What Does It Measure?

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

The Principle

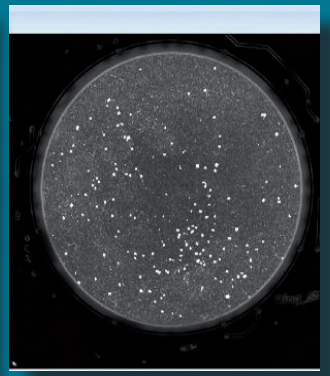
The system consists of a device in which a **petri dish** with the collected dandruff is inserted. A circularly arranged **LED light source** illuminates the sample homogeneously on a dark background. The high resolution camera above the sample takes the image and the **software detects** all dandruff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

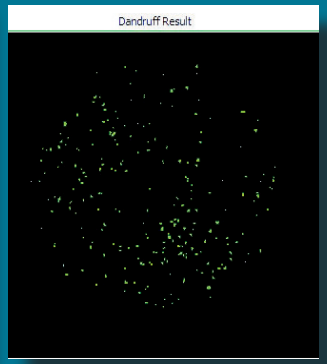
Fields of Application

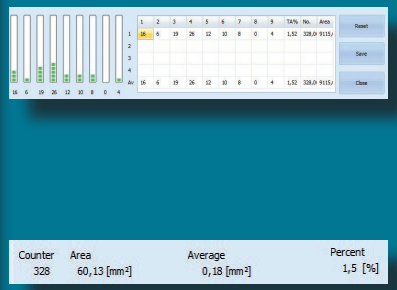
Hair care is a large field in the cosmetic industry. Analysing dandruff is one of the **most important concerns** in research of hair care products and their **efficacy testing**.

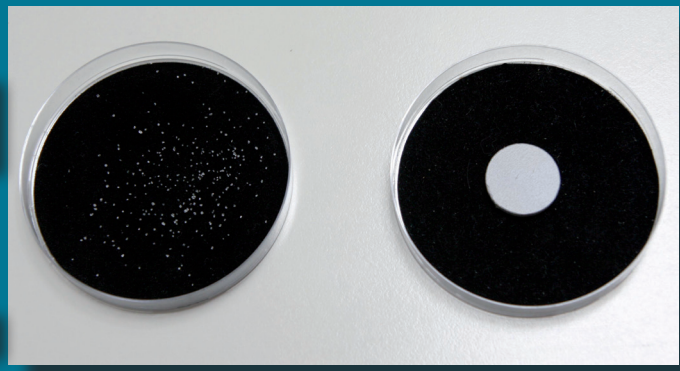
Advantages

- 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?

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 of the strip**, where it had been in contact with the lacrimal fluid, is **measured by a photocell**. 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.

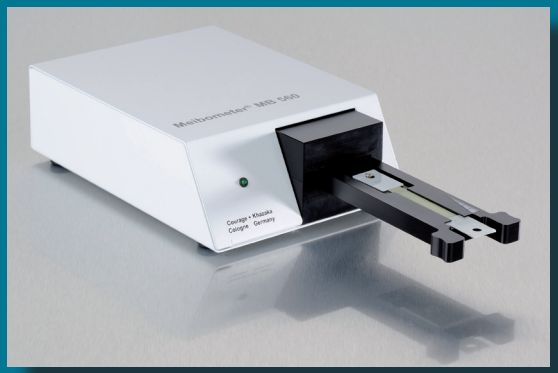
- It is important for **basic research** on the meibomian glands and the tear film.
- It is used for basic research of eye diseases, especially regarding the **dry eye syndrome**.
- It is important for **efficacy testing** of pharmaceutical products and **safety testing** of cosmetics used around the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

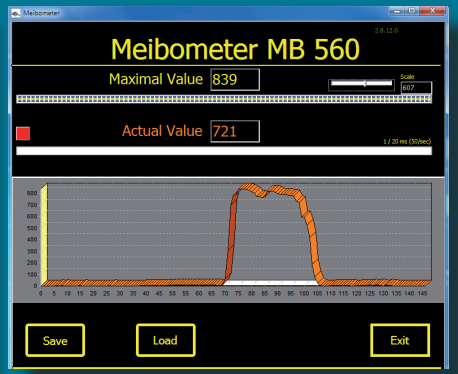
Advantages

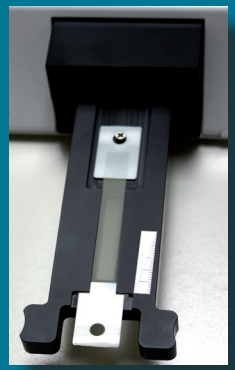
- Quick and **easy handling** of the foil strip for collecting the lacrimal fluid.
- Comfortable and **reproducible measurement** with the strip slider of the device.
- Display of the lipid content results in the **software**.
- Interface and power supply by **USB connection**, no extra power supply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

Additional Feature for the Scalp

- With an optional applicator the strips can be brought on to the **scalp with parted hair** to assess the **sebum content**.
- Ideal tool for **R&D of hair care products** (claim support and efficacy testing) as well as **dermatological basic research**.







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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