

The C+K Multiprobe Adapter System and its Advantages

- The Multiprobe 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 and all calibration data are inside and therefore they can be connected to any of them.
- The probes provide a high degree of flexibility and stability and can be easily serviced.
- The MPA system is operated with an overall C+K software.
- With a check calibration function the accuracy of the probes can be verified any time.
- The data from the ambient condition sensor RTH 100 are saved with the measurements.
- All future C+K probes will be compatible with this system.



Which Basic Devices are Available?

Multiprobe Adapter MPA 6

- connection of five probes (same or different)
- inbuilt Sebumeter tube
- operation with C+K MPA software

Multiprobe Adapter MPA 10

- connection of nine probes (same or different)
- inbuilt Sebumeter tube
- operation with C+K MPA software

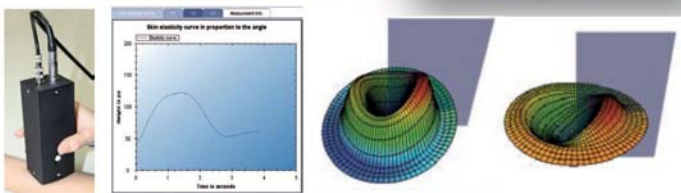
Cutometer® dual MPA 580

- connection of two Cutometer® probes (with different diameters)
- connection of four additional probes
- inbuilt Sebumeter® tube
- operation with C+K MPA software and C+K Cutometer® dual MPA 580 software.

Which Probes Can Be Connected?

The following probes for non-invasive measurements are currently available

- **Corneometer® CM 825** *Moisture*
- **Sebumeter® SM 815** *Sebum*
- **Skin-pH-Meter® PH 905** *pH*
- **Mexameter® MX 18** *Melanin & Erythema-Index*
- **Skin Colorimeter CL 400** *Colour*
- **Tewameter® TM 300** *Transepidermal Waterloss (TEWL)*
- **Glossymeter GL 200** *Gloss*
- **Skin-Thermo-Meter ST 500** *Temperature*
- **Cutometer® MPA 580** *Viscoelasticity*
- **RTH 100** *Ambient condition sensor*
- **Tewameter® TM 330T** *–New Way of TEWL Measurement*

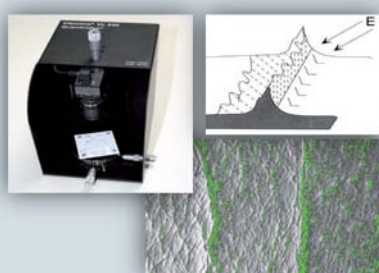


- **CUTISCAN CS 100** – MEASUREMENT OF VISCOELASTICITY BY VIDEO DURING SUCTION

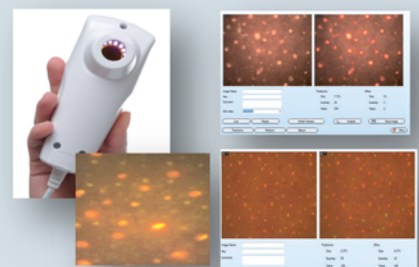
Visioscan® VC 98



Visioline® VL650



Visiopor® PP34N



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The C+K Multi Probe Adapter System and its Advantages

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

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

Which Probes Can Be Connected?

The following probes for non-invasive measurements are currently available

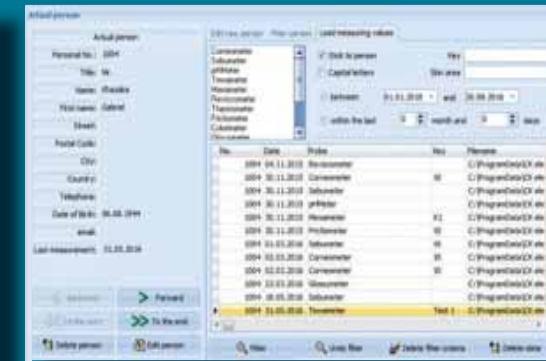
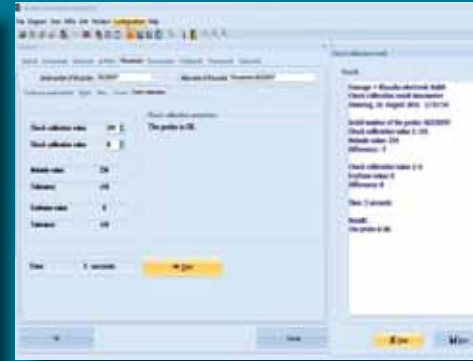
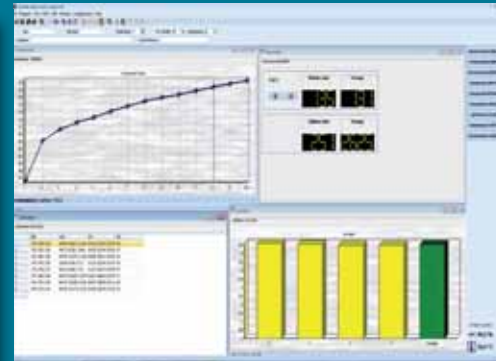
- **Corneometer® CM 825** *Moisture*
- **Sebumeter® SM 815** *Sebum*
- **Skin-pH-Meter PH 905** *pH*
- **Mexameter® MX 18** *Melanin / Erythema*
- **Skin Colorimeter CL 400** *Colour*
- **Tewameter® TM 300** *Transepidermal*
- **Tewameter® triple TM 330T** *Waterloss (TEWL)*
- **Invitro Tewameter® VT 310** *TEWL in vitro*
- **Tewitro® TW 24** *& on cell cultures*
- **Glossymeter GL 200** *Gloss*
- **Frictiometer® FR 700** *Friction Resistance*
- **Skin-Thermo-Meter ST 500** *Temperature*
- **Indentometer IDM 800** *Mech. Properties*
- **Cutometer® 580** *Viscoelasticity*
to be operated with the MPA 580 only
- **RHT 100** *Ambient condition sensor*

The Software

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

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

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



Technical Data for the Basic Devices (without Probes)

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

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Which Basic Devices are Available?

Multi Probe Adapter MPA 6

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

Multi Probe Adapter MPA 10

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

Cutometer® dual MPA 580

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

Multi Probe Adapter MPA 2

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

Multi Display Device MDD 4

- Stand-alone device with one probe & ambient condition sensor
- Possibility of connecting up to two additional probes
- Large graphic colour display for showing results
- Simple and intuitive operation with the turning knob
- Optional possibility of working with the MPA software

Fields of Application

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



Technical Data for the Basic Devices (without Probes)

MDD 4: Dimensions: 14 x 27.7 x 9 cm; Display: 9.6 x 5.7 cm; Weight: 1.4 kg; Interface: USB
Power supply: external 100-240 VAC, 47-63 Hz, DC 12V/4A

MPA 2: Dimensions: 7 x 7.5 x 6 cm; Weight: 260 g; Interface & Power supply: USB
Computer: Windows® 7, 8 or 10, performance must meet system requirements, USB 2.0, 3.0
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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

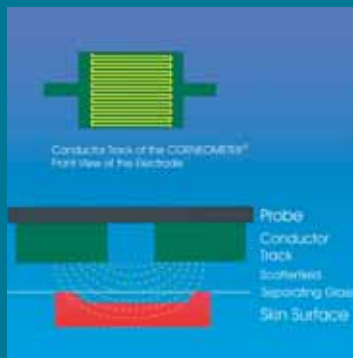
The hydration measurement is the basic measurement for all applications in basic research and cosmetics.

- 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 modern, 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 and wireless probe.



Technical Data

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

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

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What Does It Measure?

The Sebumeter® SM 815 is a worldwide acknowledged 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.

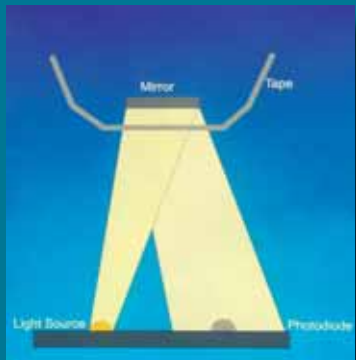
Fields of Application

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.
- Major 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 cartridge lasts for approx. 400 measurements.
- The accuracy can easily be checked with a test cartridge at any time.
- Hundreds of studies have been done with the Sebumeter®.
- Available in the C+K MPA-systems and as stand-alone device.



Technical Data

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

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.

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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.

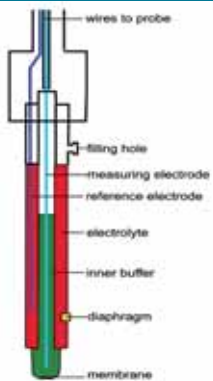
Fields of Application

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.
- Single and continuous measurement possible.
- Display of the pH-value with one decimal.
- Regular calibration can easily be done by the user.
- Available for C+K MPA-systems, as stand-alone device and wireless probe.



Technical Data

Dimensions: 22.8 cm, Measuring surface: Ø 1 cm flat; Weight: 130 g
 Measurement range: pH 1,0 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.

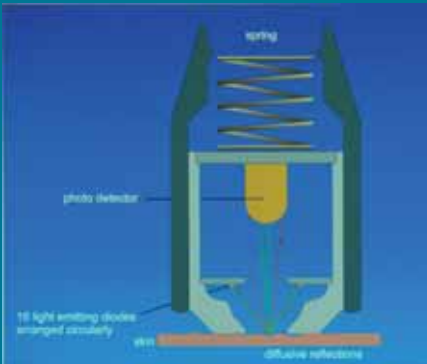
Fields of Application

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



Technical Data

Dimensions: 13 cm x Ø 2.4 cm; Measuring surface: Ø 5 mm ≈ 19.6 mm²; Probe cable: 1.3 m Weight: 85 g incl. cable
 Measurement principle: reflection
 Nominal wavelengths (peaks): green: 568 nm, red: 660 nm, infrared: 880 nm
 Units: arbitrary Mexameter® units (0-999), Measurement uncertainty: ± 5%
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What Does It Measure?

For many years, the measurement of elasticity parameters with the Cutometer® MPA 580 has been worldwide acknowledged as standard method. The Multiprobe Adaptor layout allows to connect up to four probes additionally to two Cutometer® probes. A Sebumeter® is also built in.

The Measuring Principle

The measurement is based on suction. Negative pressure 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 consisting of a light source and a light receptor, as well as two prisms facing each other, which project the light from transmitter to receptor. The light intensity varies due to the penetration depth of the skin.

The resistance of the skin to be sucked up by negative pressure (firmness) and its ability to return into its original position (elasticity) are displayed as curves in real time.

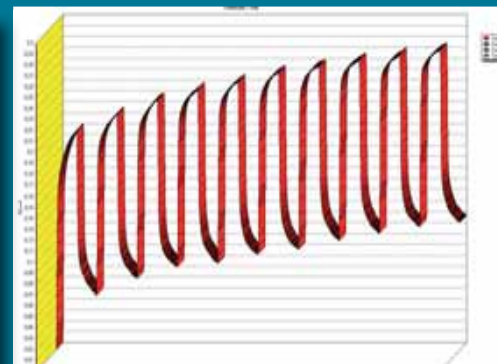
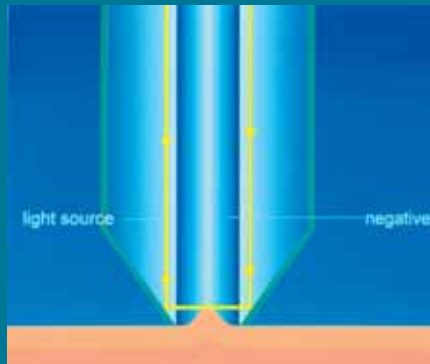
Fields of Application

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

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

Advantages

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



Technical Data

Dimensions: Device: 39,0 x 22,5 x 7,6 cm, Probe: 10,7 cm x Ø 2,4 cm, Aperture: Ø 2 mm standard, (4, 6 or 8 mm on request); Weight: Device: 3,9 kg, Probe: 165 g incl. air tube; Power supply: ext. 100-240 VAC, 47-63 Hz, DC 12V/4A; Measurement principle: suction

Units: µm penetration depth into the probe opening, expressed as curves

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Software & Parameters

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

R-Parameters

- R 0 Maximum suction depth/firmness (strength to resist the suction).
- R 1 Ability of the skin to return to its original state (minimal amplitude).
- R 2 Gross elasticity, ratio between recovery and suction.
- R 3 R 4 Maximum/minimum amplitude of the last suction curve after repeated suction. Tiring effects of the skin are visible, as the amplitude increases/decreases with each new suction.
- R 5 Net elasticity, elastic proportion of the suction curve versus elastic proportion of the release curve.

- R 6 Portion of the visco-elasticity on the elastic part of the curve.
- R 7 Portion of the elasticity compared to the complete curve, the higher the value, the more elastic the skin.
- R 8 Skin recovery after releasing the skin.
- R 9 Represents tiring effects of the skin after repeated suction and release of the skin. The higher R 9, the higher the fatigue.

F-Parameters

- F 0 F 1 Area within the rectangle (Uf x suction time) above the curve/within the rectangle (Uf x relaxation time) underneath the curve.
- F 2 Area above the upper envelope-curve of 10-times repetition of the measuring cycle.
- The smaller F 0, F 1 and F 2, the more elastic the skin. A completely elastic material will show no

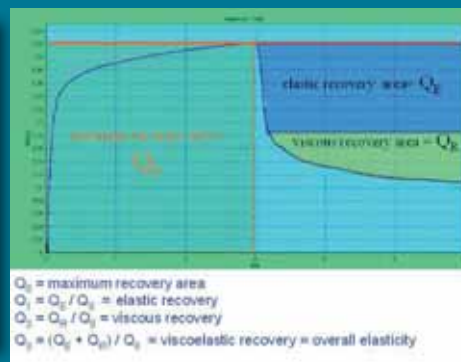
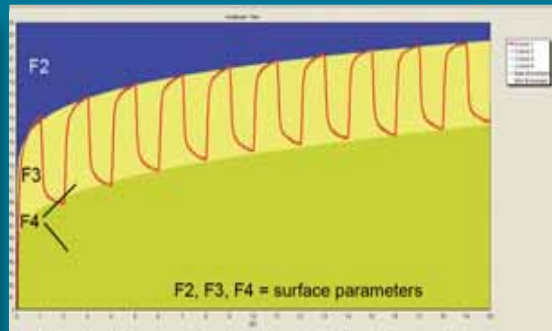
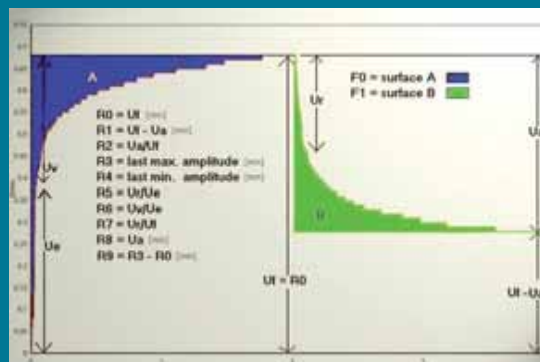
area at all. The closer the value to 0, the more elastic.

- F 3 Area within the enveloped curve, represents the skin fatigue.
- F 4 Area beneath the enveloped curve, represents the firmness of the skin (resistance to the suction).

Q-Parameters

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

- Q 0 Maximum recovery area, will decrease with increased firmness of the skin.
- Q 1 Total recovery area, increases with higher elastic recovery.
- Q 2 Elastic recovery, will increase with higher elasticity.
- Q 3 iscoelastic recovery, will increase with more elasticity of the skin.



Result	Curve 1	Curve 2	Curve 3	Curve 4
R0	0.3350	0.2740	0.3240	0.3000
R1	0.1710	0.0640	0.1640	0.0720
R2	0.4896	0.6934	0.6790	0.7000
R3	0.4250	0.3640	0.4200	0.3620
R4	0.2900	0.2050	0.2610	0.1420
R5	0.4265	0.6694	0.4752	0.5620
R6	0.9508	1.0758	0.6040	0.5673
R7	0.2758	0.3321	0.2963	0.3667
R8	0.1640	0.1900	0.2200	0.2280
R9	0.1000	0.1000	0.1040	0.0820
Q0	12.8143	10.1695	12.0983	9.7250
Q1	0.0326	0.0457	0.0503	0.0460
Q2	1.5995	1.8654	1.7184	1.3052
Q3	6.4911	7.8993	7.1399	8.1233
Q4	15.9003	13.6896	15.5419	14.0237
Q5	67.0000	54.8000	64.8000	60.0000
Q6	0.4381	0.6066	0.5990	0.6796
Q7	0.3282	0.4371	0.4448	0.5162

Technical Data

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

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

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What Does It Measure?

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

The Measuring Principle

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

A = surface area
m = water transported
t = time

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

D = diffusion constant
p = vapour pressure of the atmosphere
x = distance from skin surface to point of measurement

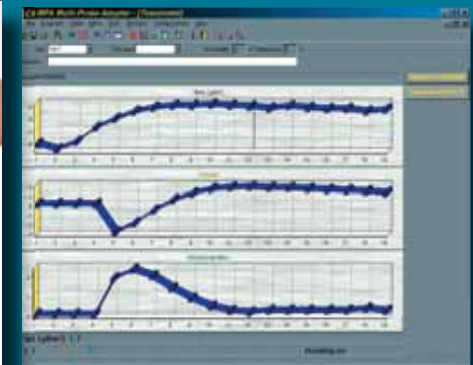
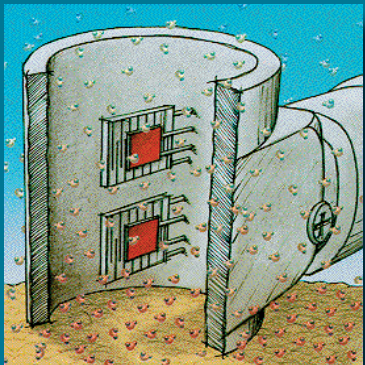
Fields of Application

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

- Indispensable in formulation, efficacy testing and claim support for cosmetics and pharmaceuticals, especially regarding improvement of the skin barrier function.
- Dermatological basic research.
- Sweat studies (anti-perspirant efficacy testing).
- Educative measurement in occupational health to alert people for the necessity of using skin protection products.
- Interesting applications in veterinary medicine and zoology.
- Also for the textile, food, packaging and paper industry, the measurement is of interest.

Advantages

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



Technical Data

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

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Special Features

- Offset of probe by the user possible for compensation of aging effects of the sensor.
- Measurement with several probes at the same time possible (e.g. for the measurement of large areas or sweat studies).
- Recording of the ambient conditions with the Ambient Condition Sensor RHT 100 to help to compare measurements taken at different times.
- Special calculations i.e. SSAL (Skin Surface Water Loss - assessment of the skin's water holding capacity after occlusion) are possible.

Special Rings & Caps

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

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 \varnothing , other sizes on request). A convenient way to study skin permeability and dermal absorption necessary for safety and efficacy testing.

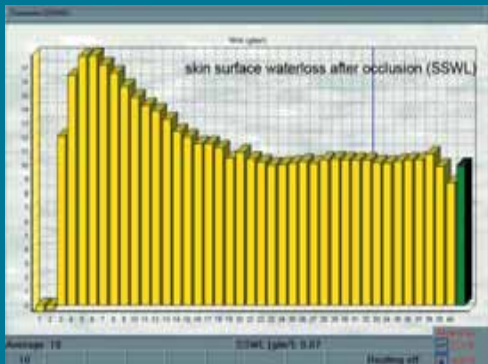
- Offers all advantages of the open chamber measurement of the Tewameter®.
- Fully comparable to in vivo measurements as the results are expressed in $g/h/m^2$.
- Up to 10 probes can measure simultaneously.
- Continuous measurements possible.
- If preparations are applied to the membrane during the measurement, a special high quality Teflon centerpiece emulating the donor chamber can be put between probe and membrane.

Probe Heater PR 100 (for Tewameter® TM 300)

To measure the TEWL precisely in a short time, the sensors need to reach the same temperature level as the skin. The Probe Heater PR100 heats the probe up to a temperature range of 28-32°C.

Ambient Condition Sensor RHT 100

- The room condition sensor constantly measures room temperature and relative humidity. These values are stored in the software together with the measurement results. Measurements become more comparable and reproducible this way.
- Important for measurement of TEWL as well as for many other parameters. TEWL, moisture, sebum, skin colour, gloss etc. will largely be influenced by the ambient conditions.
- Available for the C+K MPA-systems and for the stand-alone devices.



Technical Data: Probe Heater PR 100: Power supply: external, 12 VDC, 4 A; Dimensions: 10 x 11 x 10.5 cm Weight: 470 g
 Ambient Condition Sensor RHT 100: Dim.: 4.7 x 1.9 x 5 cm; Weight: 50 g; Measurement uncertainty: r.H. $\pm 2\%$, T $\pm 0.9^\circ\text{C}$
 Invitro Tewameter®: Dim.: Length: 6.5 cm, Measuring chamber: Height: 2 cm, Inner \varnothing : 1.5 cm, Outer \varnothing : 3 cm, Cable length: 1.3 m, Weight: approx. 60 g; Teflon-centerpiece: Height: 2.5 cm, Inner \varnothing : 1.5 cm, Outer \varnothing : 3 cm (all data for standard probe)
 Resolution: relative humidity $\pm 0.01\%$ RH, Temp.: $\pm 0.01^\circ\text{C}$, TEWL: 0.1 $g/h/m^2$, Measuring range: TEWL 0-320 $g/h/m^2$
 Measurement uncertainty: Rel. Humidity (RH): $\pm 1.8\%$, Temperature: $\pm 0.2^\circ\text{C}$; TEWL: between 10% and 80% RH: $\pm 0.25 g/h/m^2$ for TEWL values up to 5 $g/h/m^2$ and 5% for values over 5 $g/h/m^2$; 0-10% and > 80% RH: $\pm 1 g/h/m^2$ for TEWL values up to 5 $g/h/m^2$ and 10% for values under 5 $g/h/m^2$ Technical changes may be made without prior notice.

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Introduction

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

The Measuring Principle

The Tewameter® triple TM 330T probe follows the same principle by open measurement chamber as the worldwide acknowledged Tewameter® TM 300. 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.

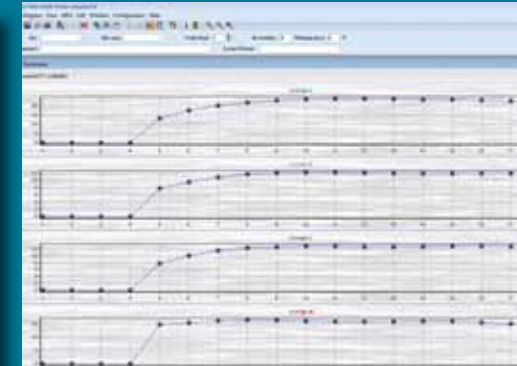
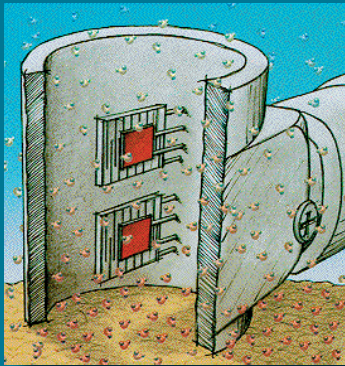
Fields of Application

Transepidermal waterloss is a basic measurement of the skin for many application purposes. The three-headed probe is especially useful for applications where time or the measurement of larger skin sites is of importance. It is also ideal for multicentric investigations and anti-perspirant studies.

Advantages

- The open chamber measurement is the only method to assess the TEWL continuously, which is necessary for most applications without influencing the skin surface. Numerous studies prove this fact.

- 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.
- New sensor technology for precise and very stable measurements.
- Check calibration can be done with the supplied functional case which can also be used to house the probe when not in use.
- Available for C+K MPA-systems.



Technical Data

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,

Resolution: Humidity: □ 0.01 % RH, Temp.: □ 0.01 °C, TEWL: 0.1 g/h/m²

Measurement uncertainty: rel. humidity (RH): □ 1.8 %, Temperature: □ 0.2 °C

Waterloss: 10% - 80% RH: □ 0.25 g/h/m² for TEWL values ≤ 5 g/h/m² and 5% for values > 5g/h/m²

0-10 % and > 80% RH: □ 1 g/h/m² for TEWL values ≤ 5 g/h/m² and 10% for values > 5g/h/m²

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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

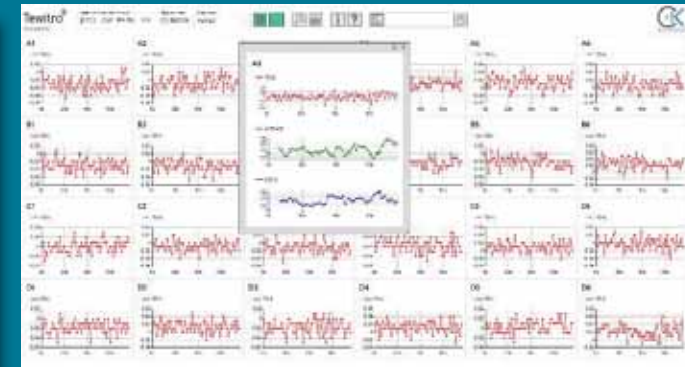
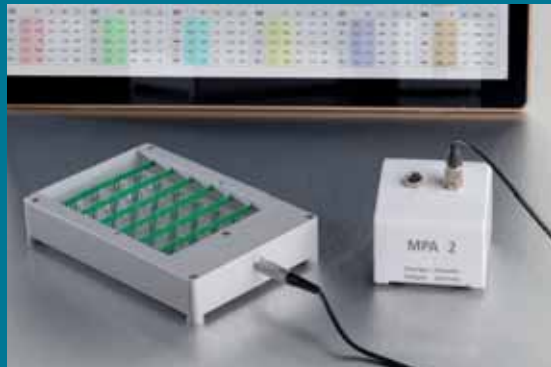
The Tewitro® TW 24 can be used in up to 24 wells plates (6x4). Each measurement inlet features two sensor pairs constantly measuring temperature and relative humidity, thus measuring in an indirect way the gradient of the water evaporation from the surface of the bottom of the well. This gradient equals 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
 - All established in different guidelines around the globe and approved by institutions such as EC3AM (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 can indicate 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.
- 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.
- Extremely time- and manpower-saving.
- Available for C+K MPA-systems.



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%
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What Does It Measure?

The Colorimeter CL 400 measures specifically the colour of the skin. Measuring values are expressed as a^*b^* 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 light reflected from the skin is measured in the probe. The raw data of the probe are corrected with a special colour matrix to adapt them closely to standard values and are expressed accordingly.

Fields of Application

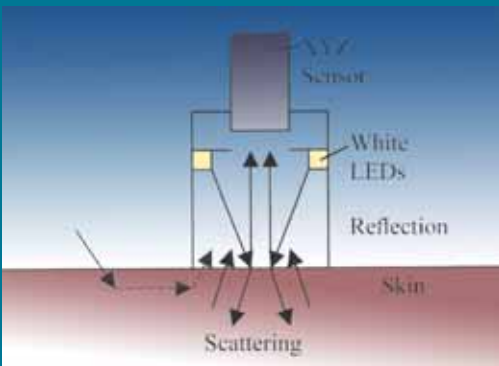
The probe has been developed especially for the needs of measuring changes in the skin color.

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

Advantages

- Very reproducible results on the skin surface, ideal tool for comparison measurements.

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



Technical Data

Length: 126 mm, Illumination: \varnothing 24 mm, Measuring area: \varnothing 8 mm, Weight: 85 g, Illuminated area approx. 17 mm \varnothing , 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: \pm 5%

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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.

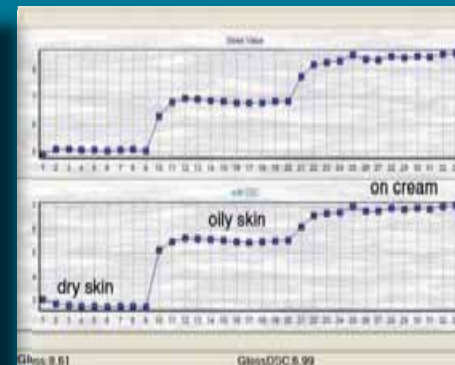
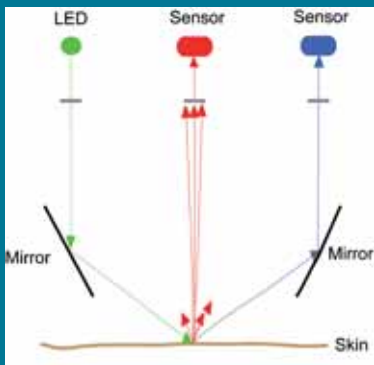
Fields of Application

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 facial care.
- Also suitable for assessment of dental gloss for developing and evaluating products for tooth surface enhancement.

Advantages

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



Technical Data

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

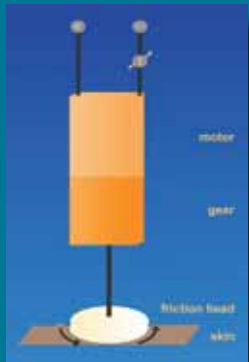
Fields of Application

- 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. Oil 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.



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: $\pm 10\%$
 Measurement principle: torque
 Technical changes may be made without prior notice.

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What Does It Measure?

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

The Measuring Principle

The measurement is based on relative infrared temperature measurement.

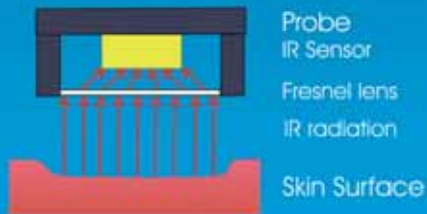
Fields of Application

The probe 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.
- Available for C+K MPA-systems, as stand-alone device and wireless probe.



Technical Data

Dimensions: 13.5 cm; Weight: 85 g incl. cable; Measuring surface: Ø 2.4 cm;
Measurement range: 15 - 35°C, Measurement uncertainty: $\pm 0.2^\circ\text{C}$, Resolution: 0.01°C
Measurement principle: infrared
Technical changes may be made without prior notice.

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What Does It Measure?

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

The Principle

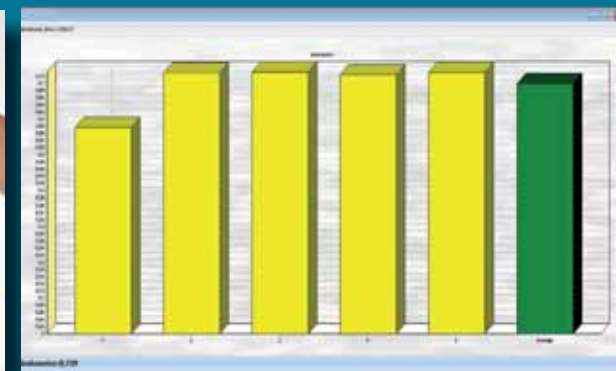
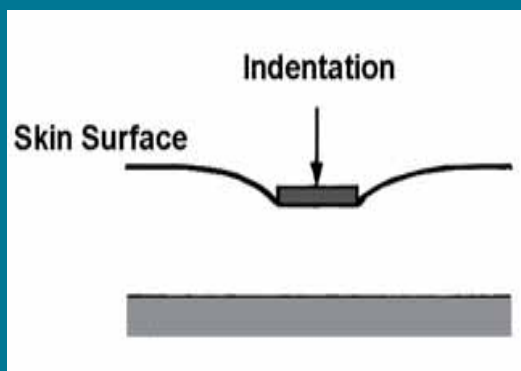
The measurement principle is based on the force (by a spring) used on the small indenter of the probe to deform the skin. The device measures how the probe indenter displaces the skin. The penetration depth of the pin (displacement) is measured in mm (0-3 mm). The firmer/stiffer the skin, the less deep 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 \varnothing (2, 3 and 5 mm \varnothing) 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 \varnothing).
- 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: \varnothing 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: 50 μ m, Measurement uncertainty: \pm 0.075 mm
 Measurement principle: indentometry
 Technical changes may be made without prior notice.

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What Does It Measure?

The MoistureMap MM 100 is a device, featuring a capacitance based sensor comparable to the renowned L'Oréal 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

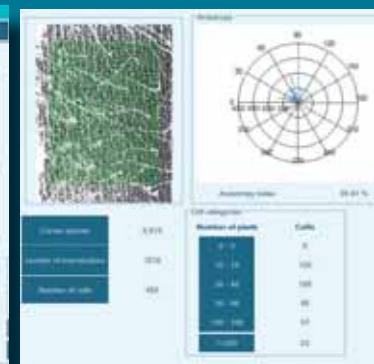
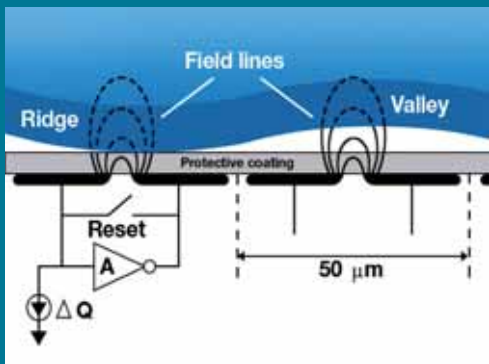
- wherever moisture distribution plays a role, the MoistureMap MM 100 is an ideal imaging addition to the purely quantitative measurements.
 - Efficacy testing of cosmetics & pharmaceuticals & surfactants
 - Sun damage and illustration of skin lesions and scars.
 - To map the hair moisture level

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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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.

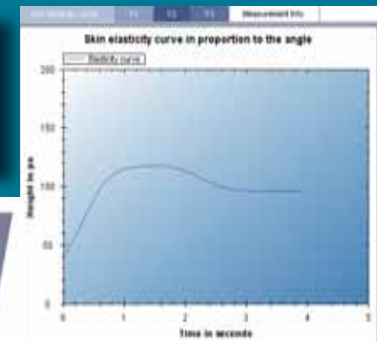
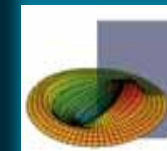
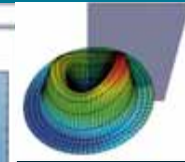
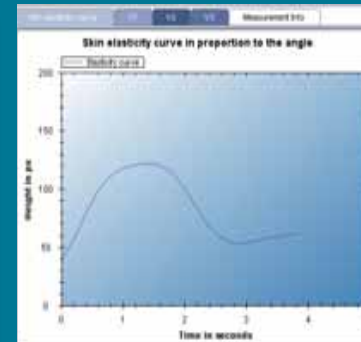
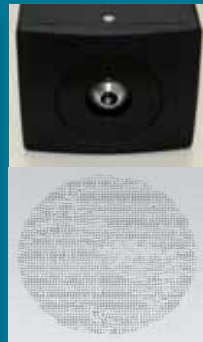
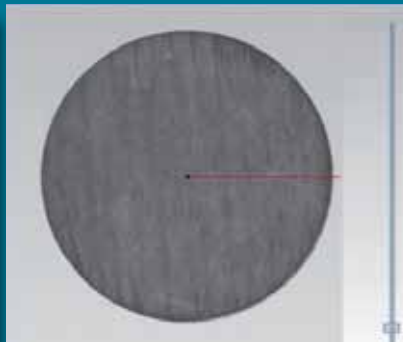
When looking at the skin displacement in all directions, it becomes obvious that in some directions the displacement and the returning rate are higher than in others depending on the linearity of the skin (anisotropy).

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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What Does It Measure?

The Visiopor® PP 34N camera uses a specific UVA-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.

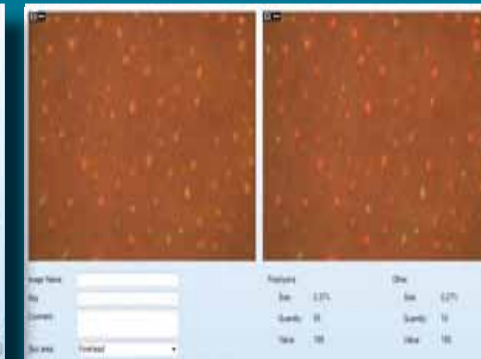
The presence of porphyrins can be demonstrated by orange-red fluorescence in the follicle openings by examining the skin under appropriate UVA-light. The intensity of follicular fluorescence and the extent of facial involvement are proportional to the population density of P. acnes and porphyrin content 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® 7, 8 or 10, performance must meet system requirements, USB 2.0; 3.0
 Technical changes may be made without prior notice.

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What Does It Measure?

The Visioscan® VC 98 USB is a unique 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 skin and hair.

The Measuring Principle

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

Fields of Application

- Efficacy testing & claim support for cosmetics, pharmaceuticals and detergents, regarding skin roughness and microrelief.
- Dermatological basic research.
- Demonstrating the necessity of the application of skin care and protection in occupational health.

Software & Parameters

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

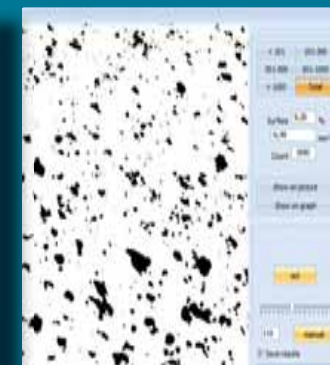
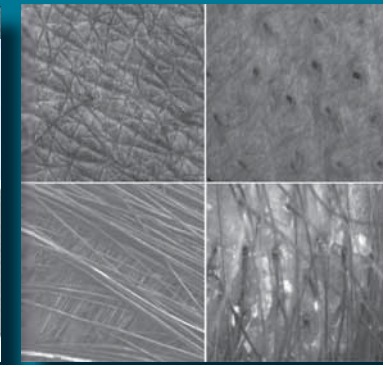
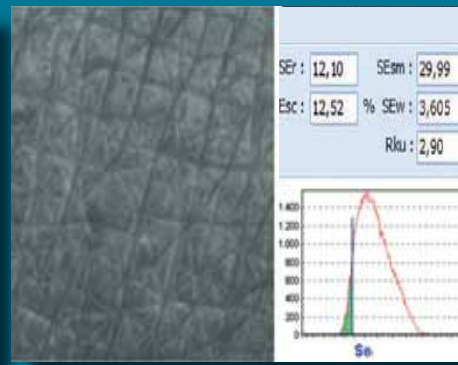
- The evaluation method SELS (Surface Evaluation of the Living Skin) analyses the grey level distribution and allows the calculation of four clinical parameters to quantitatively and qualitatively describe the skin surface as an index: Skin smoothness (SE_{sm}), Skin roughness (SE_r), Scaliness (SE_{sc}), wrinkles (SE_w).
- Evaluation of a desquamation index directly on skin & scalp or with the foil Corneofix® 20.
- Determination of the sebum production with the foil Sebufix® 16.
- Additional interesting functions, e.g. anisotropy, hair length measurement after shaving.

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

Advantages

- The special UV-light gives a very sharp, high resolution and non-glossy image.
- Pigmentation underneath the skin surface can be shown very well.
- All results can be stored, printed out together with the images and exported to Excel®.
- Easy and quick calibration of the system.
- A macro function allows the analysis of many images at the same time.
- Worldwide established method with many studies.
- Even used on the ISS in space.
- The Visioscan® VC 98 USB can be used together with the Skin Visiometer® S 100 as combination instrument.

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



Technical Data

Dimensions: 11.8 x 5.6 x 4.8 cm; Weight: 250 g; Image size: 12 x 9.5 mm; Sensor resolution: 1/2» B/W CMOS-sensor 1.3 MPix (1280 x 1024 pixels); Light source: UV-A approx. 390 nm
 Connection box: Dimensions 14 x 5.5 x 15 cm; Weight 1 kg; Interface: USB 2.0, type B connector
 Power supply: Input: 110-250 V, 47-63 Hz, Output: DC 12V/4A
 Measurement principle: optical, reflected light from skin

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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 blue 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.

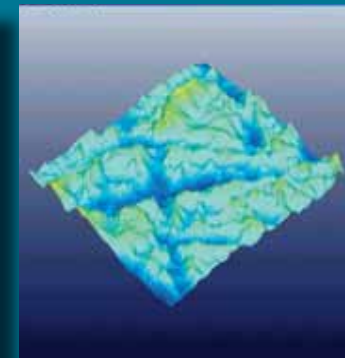
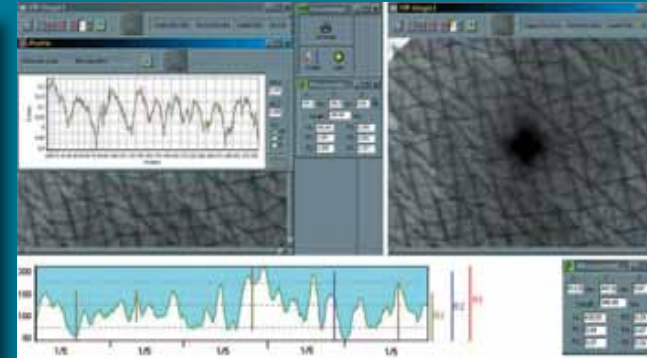
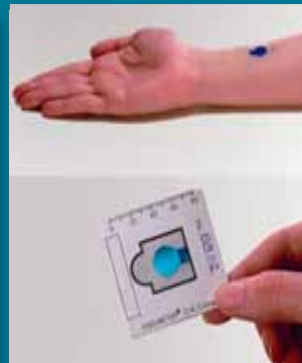
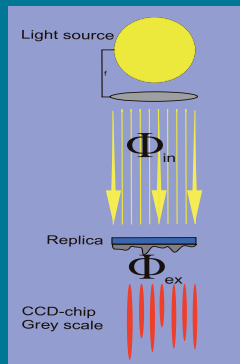
- With this method various skin parameters can be calculated within one second.
- Lines can be drawn on the images and the profile and the results are shown immediately.
- Calculation of standard roughness parameters R_t , R_m , R_z , R_p and R_a for up to 180 lines (drawn vertically, horizontally or radially on the image).
- Calculation of special parameters: volume (mm^3), unfolded surface (μm^2), anisotropy and cell density.
- Display of coloured 3D image, relief, false colour.
- Determination of desquamation and sebum production with foils Corneofix® 20 & Sebifix® 16.

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 98 USB with its analysing software SELS (Surface Evaluation of the Living Skin) can be added to the system.



Technical Data

Power supply: external 100-250 VAC, 47-63 Hz, 1 A max.; Dimensions: 26 x 24 x 7 cm; Weight: 2.7 kg

Measurement area : 7.5 x 5 mm ± 21 μm (360 x 274 pixels); Resolution: 2560x1920 pixel (5 MPix)

Light source: globe with power LEDs; Interface: USB 2.0, connection for Visioscan® VC 98 USB;

Pump: Power supply: 100-250 VAC, 47-63 Hz, 4A, Dimensions: 26.5 x 12x 8 cm, Weight: 2.5 kg;

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

Measurement principle: optical, transmitted light through replica Technical changes may be made without prior notice.

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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.

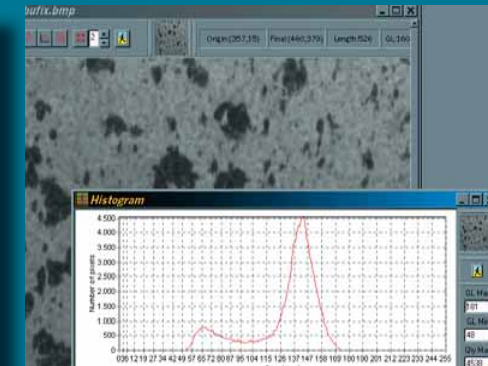
Fields of Application

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 sebaceous glands.
- In cosmetology for formulation and efficacy testing, the sebum level of the skin is one of the most important parameters.
- Especially suitable for the field of cleansers, anti-acne skin care, cosmetics for oily skin etc.
- Studies of the characterization of the hydro-lipidic film.

Advantages

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



Technical Data

Dimensions: 1.7 cm x 1.7 cm; Thickness: 0.2 mm

The foils present no hazard to the skin.

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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

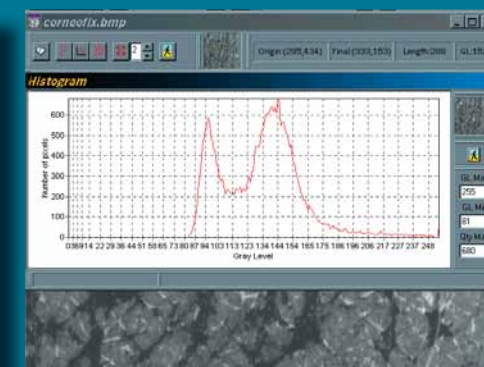
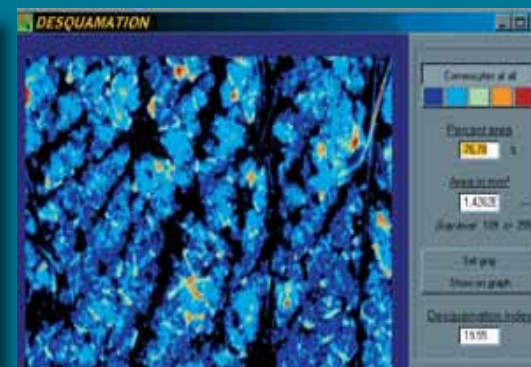
The adhesive side is applied to the skin area to be measured. On removing the tape from the skin, the corneocytes stick to the tape.

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 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.
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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

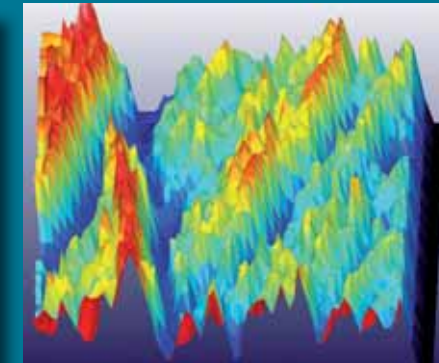
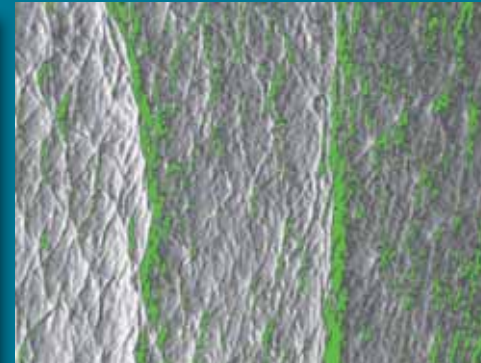
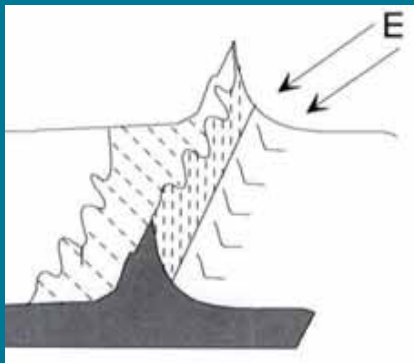
The measurement is based on skin replica and oblique lighting. The replica is illuminated at an angle of 35° and the mountains representing the wrinkles of the skin produce measurable shadows. They are digitalized by a high resolution camera mounted vertically to the replica and serve as a basis for 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® 7, 8 or 10, performance must meet system requirements, USB 2.0
 Measurement principle: optical, reflected light from replica

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What Does It Do?

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

The Device

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

Fields of Application

Ideal device for

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

Advantages

- Removable head and chin rest allowing exact positioning frontally or sidewise
- Reproducible positioning of the face overlays (ghost images) of previous images of the person and drawing of marks on interesting parts are possible.
- A colour chart is photographed with each face to make photos comparable over time and ambient light conditions.
- Conveniently designed software to enable you to work quickly.
- Easy creating of studies with volunteers and different stages.
- Perfect organization of all photos for later comparisons.

- Zoom into several images at the same time to compare. Up to 10 images can be viewed in tile view, and more images in pile view.
- Different print options (images by study, person, time or only the details of a study)
- All changes of the data in a study are recorded in a history
- The software works with a login. Different rights can be provided for administrators (creating of studies, deleting of images, etc.) and for users.
- Possibility of adapting the software to your CI by changing the logo and the background colour.



Technical Data

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

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What Does It Measure?

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

The Principle

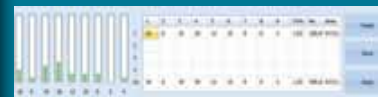
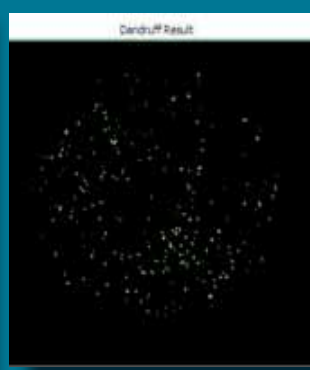
The system consists of a device in which a petri dish with the collected dandruff is inserted. A circularly arranged LED light source illuminates the sample homogeneously on a dark background. The high resolution camera above the sample takes the image and the software detects all dandruff and categorizes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



Counter	Area	Average	Percent
328	66,13 [mm ²]	0,18 [mm ²]	1,5 [%]



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?

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.

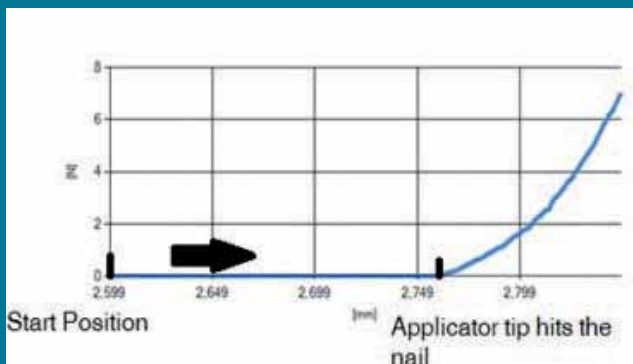
- Resistance to compression force: the nail is deflected punctually. The slope of the curve indicates the structural strength: firmness of the nail. Also the thickness of the nail can be assessed.
- Longitudinal deformation: the nail is deflected horizontally. The slope of the curve indicates the elasticity 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 and 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 (R² and deviation) to check the measurement immediately.
- Study based simple and quick evaluation of the results in statistical programmes possible.



	Structural Strength	Deviation from Average in %	R ²
Curve 1	34.5044	1.7	0.576
Curve 2	35.7159	0.6	0.585
Curve 3	37.3422	5.2	0.592
Curve 4	34.0254	4.1	0.585
Average (σ)	35.4580		

SD	Thickness (σ)
1.22043	0.48742

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® 7/8/10, USB 2.0 or 3.0
 Technical changes may be made without prior notice.

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What does it measure?

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

The Measuring Principle

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

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

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

Fields of Application

Ideal instrument for

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

Advantages

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

**Technical Data**

Dimensions: 10 x 26 x 25 cm, weight : 2.3 kg, external power supply: 90-264 V, 50-60 Hz

Measuring principles: Corneometer®: capacitive, measuring area: 49 mm², frequency 0.9-1.2 MHz

Sebumeter®: photometrical, sebum content in mg/cm²

Skin pH-Meter®: pH 0 to pH 12

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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.

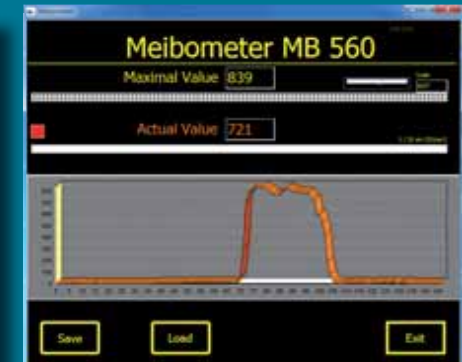
Fields of Application

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.



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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