## 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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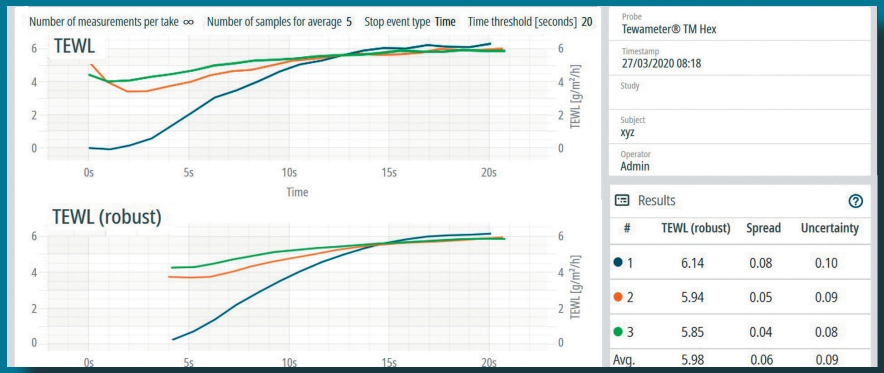
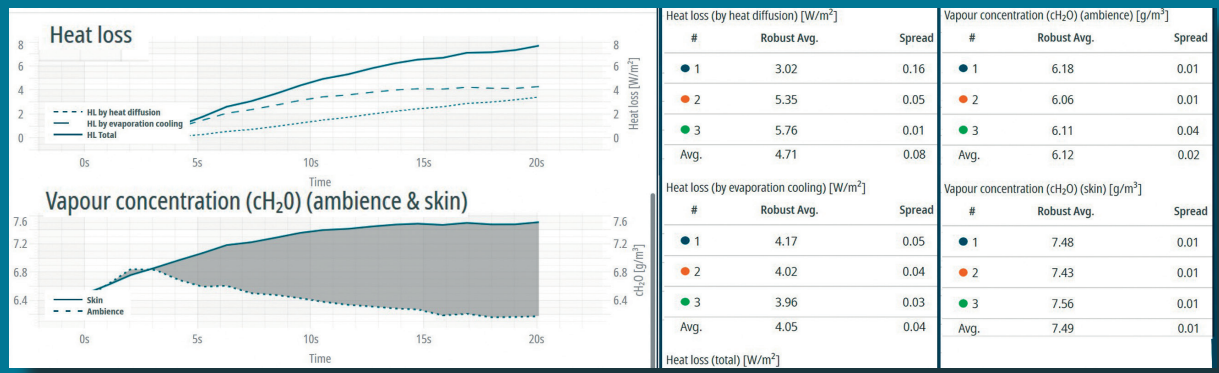
## Advantages of Tewameter® TM Hex

- 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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