

TEWL (Trans Epidermal Water Loss) – short term test

Test aim: the test determines, by measuring transpiration water loss, the eventual influence of a cosmetic treatment on skin barrier function. TEWL elevated values are in fact the symptom of an unfavourable alteration in the integrity of skin barrier function, while unaltered values or levels inferior to the basal ones show, on the contrary, that skin barrier effect has not modified or increased.

The TEWL is also employed in compatibility test, to confirm clinical assessment and support more objective conclusions.

Subjects undergoing the trial:

- ❑ n 20 - 60 subjects, age: 18 – 60, sex: M/F
- ❑ Criteria of volunteers selection:
 - Good health condition
 - Absence of skin pathologies
 - Absence of topic pharmacological treatment in progress
 - Negative anamnesis for atopy
 - Obligation not to use any other topic product in treatment area during the 24 hours before measurement
 - Exclusions: women during pregnancy or lactation, minors
- ❑ Every volunteer is given a form to fill in and subscribe, in order to express free consent to the test and to the above mentioned conditions.

Experimental procedures: one of the following experimental procedures can be employed

- Active vs placebo
- Positive control
- Comparison among the products

Test performance:

- ❑ Random subdivision of treatments on contralateral areas
- ❑ As the test is based on instrumental detection of results, it is not necessary to perform it with blind or double-blind technique.

Scheme of test performance:

- ❑ The TEWL is normally measured on the volar surface of the volunteers forearm.
- ❑ Volunteers should be relaxed and acclimatized to the measuring environment for at least 20 minutes (23°C ± 2°C; 50% ± 5% RH). Measurements are carried out before treatment and at the following intervals of time from application: 30 - 120 - 360 minutes and 24 hours.
- ❑ The sample is applied on precise areas (16 cm²/area) and the operator will favour absorption by employing a finger-cot for manipulation, thus granting an average application equal to 2 mg product/cm².

Instrumentation: The measurement is carried out by TEWAMETER TM 210. The probe contains some sensors for the detection of relative humidity and temperature, the electronic control equipment and the chip with all calibration values. The measuring head is composed of an empty cylinder (10 mm diameter, 20 mm height) to prevent air influence and turbulence.

Guidelines: "Assessment of water evaporation through skin (Trans Epidermal Water Loss) according to Guidelines for TEWL measurement." Contact Dermatitis 1990; 22: 164-178

Analysis and assessment of results:

- ❑ Assessment of criticality
- ❑ Statistic treatment of data: Wilcoxon test (significance level α : 5%)

Documentation: a report is compiled with the following structure: identification — objective — significance — work plan — protocol — results — statistics — discussion of results — signature.