Innovative Testing Solutions

TSA

TACTILE SENSATION ANALYZER

Objective measurement of the softness, roughness and stiffness of a textile fabric

ADVANTAGES

- objective measurement of
  - softness
  - roughness and
  - stiffness
- hand feel value calculation integrated
- measurement of elasticity and recovery
- accurate
- reliable
- excellent correlation to the human feeling

USERS

- chemical suppliers
- fiber manufacturers
- manufacturers of base and finished products
- retailers
- universities and institutes

Traditionally, the haptic quality of a textile material has been tested by the human hand, in the best case by human hand panels. The human feeling depends on several factors, e.g. personal and market specific preferences, the daily mood and the culture. A further disadvantage is the inability to feel the three basic haptic parameters individually, which determine the overall haptic impression of a material that is touched by the hand.

BASIC

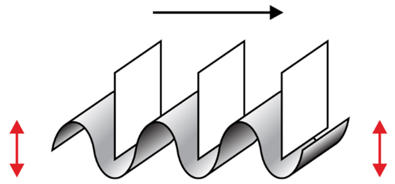
The emtec TSA Tactile Sensation Analyzer simulates the human hand and objectively measures the micro-surface variations (feeling of softness), the macro-surface variations (feeling of roughness) and the in-plane stiffness of any kind of textile material (base material and finished products). These are the three basic haptic parameters, which are also felt by the human hand, but the TSA provides a result for each of the three individually. By the help of special algorithms, these three single parameters can be combined to the so-called hand feel (HF) value. With the right mathematical model, a correlation to the human expectation of up to almost 100 percent is possible.

TSA | TACTILE SENSATION ANALYZER

The TSA measuring instrument and measuring method are internationally patented and protected.

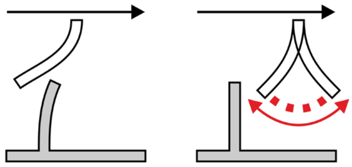
MEASURING PRINCIPLE

First step is a sound analysis: roughness (TS750) is measured.

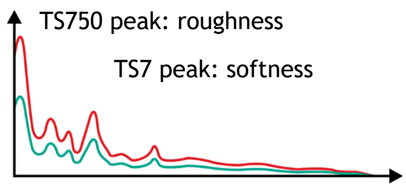


vertical vibration of textile samples vary according to surface structure / roughness (TS750).

The second step is a sound analysis and a deformation measurement: the softness (TS7) and the deformation parameters in-plane stiffness (D), elasticity (E) and the recovery (determined by hysteresis (H) and plasticity (P)) are measured.

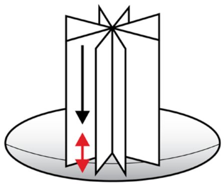


Blade vibration varies according to fiber softness (TS7).



The sound spectrum shows the results of the sound analysis.

y: sound intensity x: frequency



The stiffness D as well as H and P are measured by a deformation measurement. E is measured with a second deformation measurement

APPLICATION AREAS

r&d

process optimization

product optimization

incoming control

quality assurance

troubleshooting

complaint management

benchmarking

MATERIALS

base products (any kind of untreated or treated fabric)

finished products (home textiles, clothes, sportswear, automotive textiles, e.g. seat belts)

TECHNICAL DATA

device dimensions	44 x 19 x 47 cm (H x W x D)
device weight	19 kg
power supply	115-230 VAC, 50/60 Hz
standard sample dimension	⌀ 112.8 mm = 100 cm^2

SOFTWARE

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