Seal Strength, Ribbed Heat-Sealing by Tension

TVT Texture Analyzer

The TVT Texture Analyzer (Figure 1) offers rapid and objective analysis for all kinds of products. The following parameters can be characterized for your product category:

- Seal strength
- Homogeneity of sealing
- Extensibility

Both international standard methods as well as customer tailor-made profiles are available.

Figure 1: TVT Texture Analyzer

Scope

- Determination of seal strength for ribbed-heat sealing by single cycle tension.

Method Description

The recording of the measurement data commences once the probe reaches the pre-set trigger force. The probe will then pull the sample to a pre-defined distance. After the tension, the probe returns to its starting position.

Calibration

Make sure the instrument is correct calibrated before the measurements. How to perform the calibration can be found in the User's Manual.

Load cell (recommended) 5 - 15 kg

Probe
P-PC, Self-tightening Parallel Clamp, (Figure 2a)

Part number: 67.50.25

Fig. 2a: R-PC

Rig
R-PC, Self-tightening Parallel Clamp, (Figure 2b)

Fig. 2b: R-PC

Profile Settings

Setting Parameter	
Single Cycle Tension	
Sample height [mm]	60.0
Starting distance from sample [mm]	5.0
Extension [mm]	40.00
Initial speed [mm/s]	1.0
Test speed [mm/s]	1.5
Retract speed [mm/s]	10.0
Trigger force [g]	10
Data rate [pps]	333

Sample preparation

Cut 10 cm long rectangular stripes with the sealing being in the center. Attach the sample to the rig and probe, Figure 3. Try to avoid any slack of the sample when attaching it. *NOTE The extension distance should be at least twice as long as the heat-sealing.*

Figure 3: Sample set-up

Curve Description

In Figure 4 a typical Force-Distance curve is illustrated. The maximum peak^{+} force value is the maximum seal strength. It might also be of interest to compare the individual seal strengths, distance to the maximum seal strength, area and the smoothness of the peaks which gives information about the homogeneity and additional properties of the sealing.

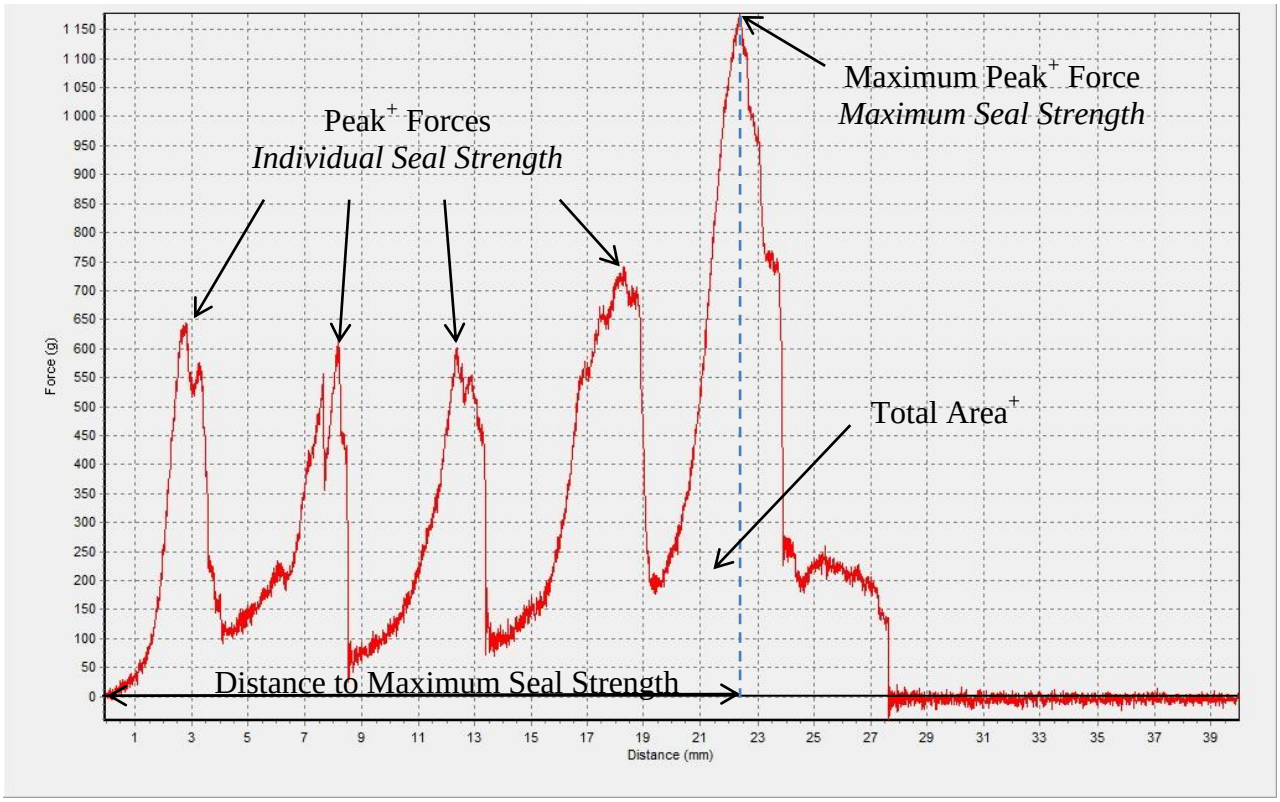

Figure 4: Tension of ribbed heat-sealed package.

Data Analysis

The force required to pull the sample to a maximum peak^{+} is here defined as the maximum seal strength and can be measured in the units **[g]** or **[N]**. The distance to the maximum peak^{+} force is measured in **[mm]**. Except raw data (force, time and distance) the program also directly provides calculated results such as ***mean value*** and ***standard deviation***.