Sponge Cake Firmness & Springiness by Hold Until Time Compression

TVT Texture Analyzer

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

- Firmness
- Springiness
- Cutting force

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

Figure 1: TVT Texture Analyzer

Scope

- Determination of sponge cake firmness and springiness by hold until time compression.

Method Description

The recording of the measurement data commences once the probe reaches the pre-set trigger force. The probe will then compress the sample to a pre-defined percentage of the sample height, and hold in that position during a pre-set time. After compression, 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 - 10 kg

Probe
Cylinder probe 36 mm diameter, rounded edges Aluminum (Figure 2), Part number: 67.01.60

OR

Cylinder probe 36 mm diameter, rounded edges Stainless Steel, Part number: 67.30.36

Figure 2: P-CY36R

Test mode settings

Setting Parameter	
Hold until time compression	
Sample height [mm]	25.0
Starting distance from sample [mm]	5.0
Compression [%]	25.00
Hold time [s]	60
Data acquisition time [s]	60
Initial speed [mm/s]	1.0
Test speed [mm/s]	1.0
Retract speed [mm/s]	10.0
Trigger force [g]	5
Data rate [pps]	200

Sample preparation

Slice the sponge cake in similar slice thickness and place a sample on the measuring table and center it under the probe. Avoid larger sample irregularities in the measuring area. Work quickly, since contact with air dries out the sponge cake and makes it firmer. *NOTE The sample size should be kept constant to be able to compare different samples and the sample diameter is assumed to be larger than the diameter of the probe.*

Curve Description

In Figure 3 a Force-Time curve is illustrated. The maximum peak^{+} force indicates the firmness of the sponge cake at the pre-set compression depth and is here called Force A. The force required after 60s holding time, called Force B, is used for calculating the springiness.

$$\frac{Force\ B}{Force\ A} \times 100 = \%\ Springiness$$

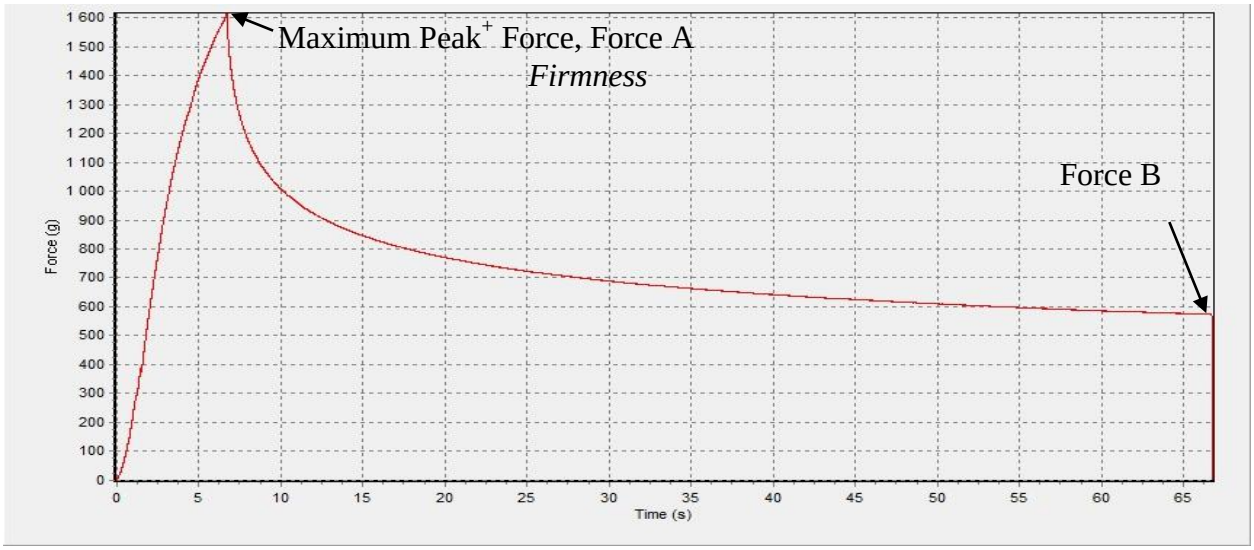

Figure 3: Hold until time compression of sponge cake.

Data Analysis

The force required to compress the sample to a certain strain is here defined as firmness and can be measured in the units **[g]** or **[N]**. Springiness (recovery) is given as a percentage **[%]** value. Except raw data (force, time and distance) the program also directly provides calculated results such as ***mean value*** and ***standard deviation***.