

Cinnamon Roll Firmness by 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 firmness for Cinnamon rolls by single cycle 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 distance. 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

P-CY25S, Cylinder probe 25 mm diameter, stainless steel

(Figure 2)

Part number: 67.30.25



Figure 2: P-CY25S

Profile settings

Setting Parameter

Single Cycle Compression

Sample height [mm]	25.0
Starting distance from sample [mm]	10.0
Compression [mm]	6.20
Initial speed [mm/s]	2.0
Test speed [mm/s]	1.7
Retract speed [mm/s]	10.0
Trigger force [g]	20
Data rate [pps]	200

Sample preparation

Wrap the cinnamon rolls in double plastic bags and store them in room temperature until further testing. For staling studies, perform the measurements on days 3, 7, 10 and 14 after baking. To standardize the cutting, start by cutting of the four sides of the roll and place it in a 25 mm (or 1") high template (preferably) before cutting of the top. Place the sample on the measuring table centrally below the probe. Work quickly, since contact with air dries out the cinnamon roll and makes it firmer. **NOTE** Let the cinnamon rolls cool down for 1 hour in room temperature before packed if they are new-baked. Texture measurements on less sweet baked products are most commonly performed at day 1, 3 and 7 after baking.

Curve Description

In Figure 3 a typical Force-Time curve is illustrated. The maximum peak⁺ force value is here used for the firmness.

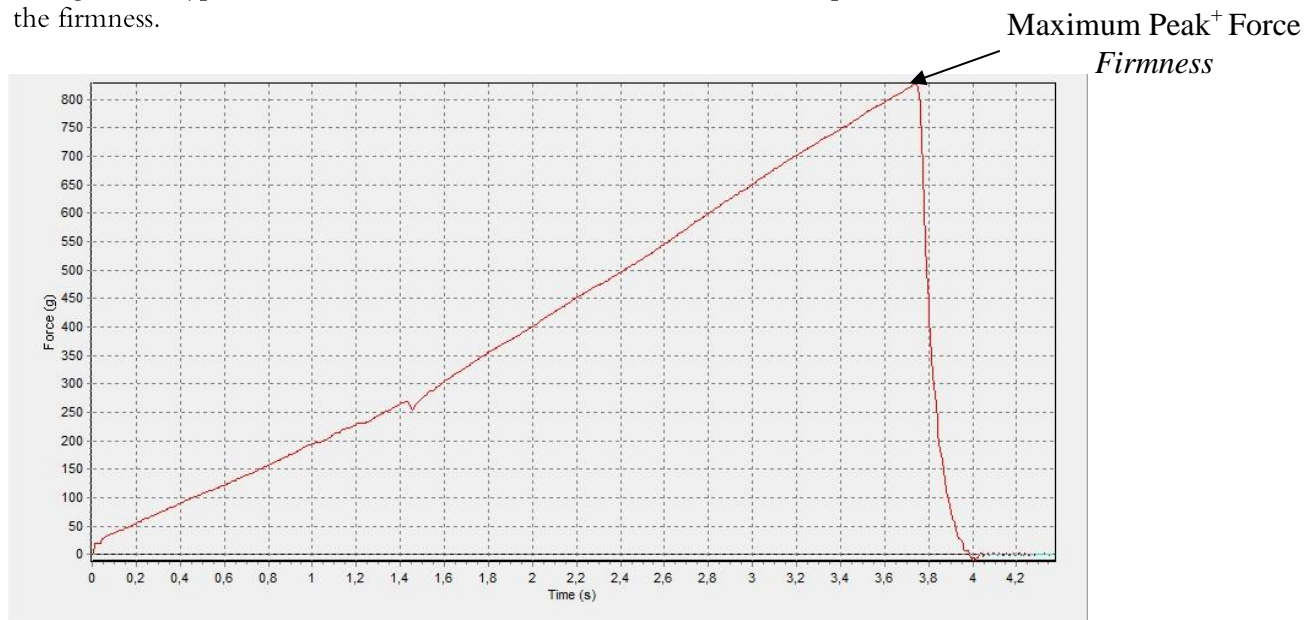


Figure 3: Single cycle compression of cinnamon roll.

Data Analysis

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