

## White Pan Bread Firmness by Compression, *AIB Standard Procedure*

### TVT Texture Analyzer

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

- Firmness
- Springiness

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



Figure 1: TVT Texture Analyzer

### Scope

- Determination of firmness for white pan bread crumb by single cycle compression, AIB Standard Procedure (AIB).

### 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.

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Load cell (recommended) 5 - 10 kg

#### Probe

P-CY25S, Cylinder probe 25 mm diameter, stainless steel  
Part number: 67.30.25 (Figure 2)



Figure 2: P-CY25S

## Profile settings

### Setting Parameter

Single Cycle Compression

Sample height [mm]	25.0
Starting distance from sample [mm]	5.0
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]	10
Data rate [pps]	200

## Sample preparation

Let the new-baked loaves cool down for 1 hour in room temperature before being packed in double bags. Store the packed loaves in room temperature until further testing. Texture measurements are most commonly performed at day 1, 3 and 7 after baking. Use two loaves for every testing day. Slice each loaf in 25 mm thick slices or use two slices of 12.5 mm which then should be stacked together. Avoid taking the 3 slices nearest the end of the loaf, since they are normally harder than the rest of the slices. One 25 mm slice or two 12.5 mm slices are used for each measurement. Try to get 6 measuring samples from each loaf (12 samples in total).

Place the sample on the measuring table and center it below the probe, Figure 3. Make sure no larger irregularities are in the measuring area. Work quickly, since contact with air dries out the bread and increases the firmness. If a sample is irregular avoid using it in the test. This test could be done with or without the bread crust. Avoid getting the probe too close to the edges since it will have an effect on the measuring results.

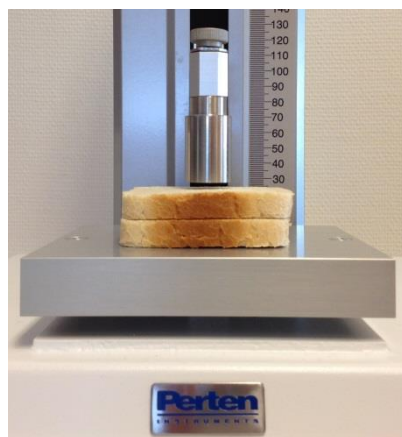


Figure 3: Sample set-up

## Curve Description

In Figure 4 a typical Force-Time curve is illustrated. The maximum peak<sup>+</sup> force value is here used for the firmness.

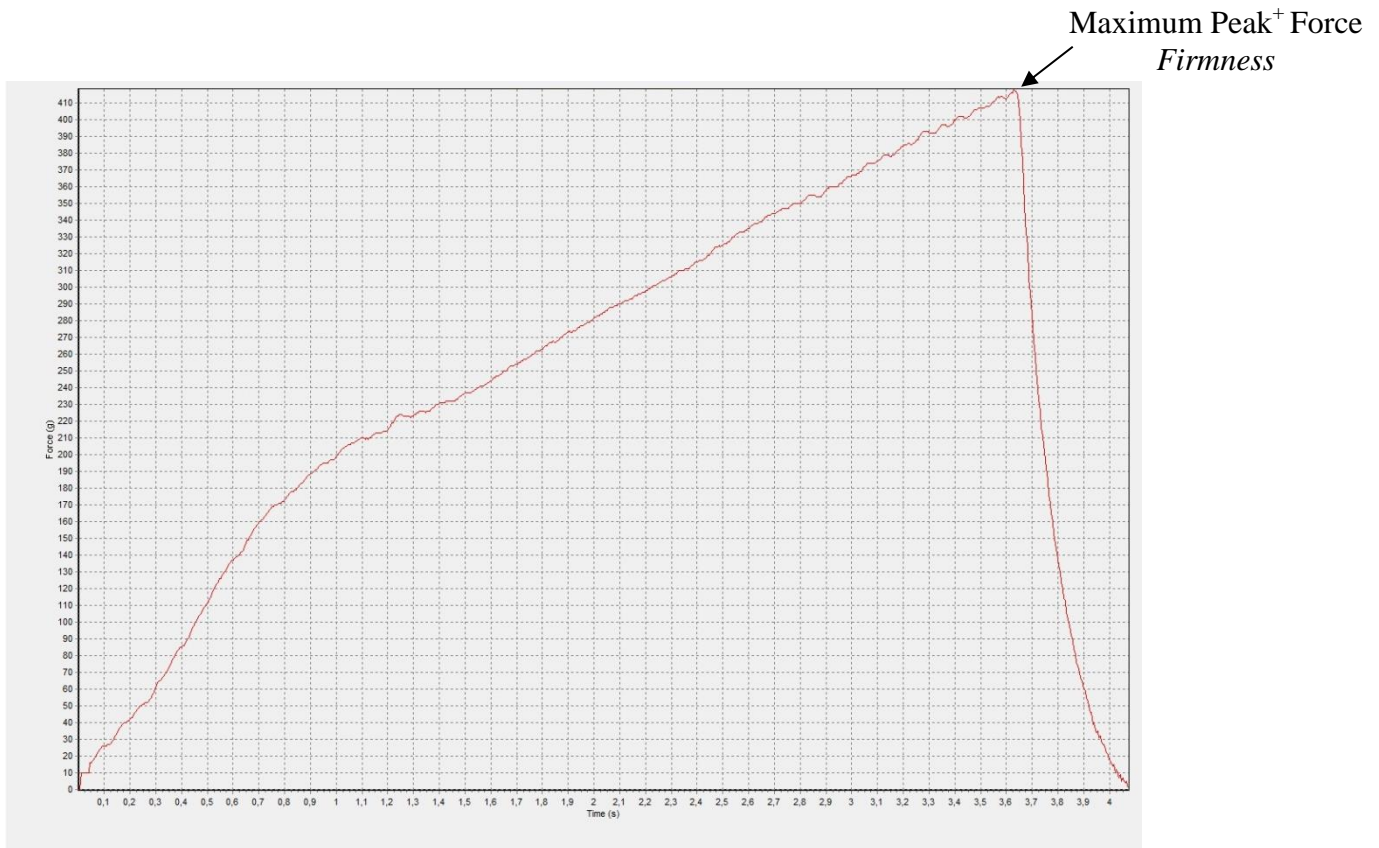


Figure 4: Compression of white pan bread

## 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*.

## Reference

AIB White Pan Bread Firmness Measurement. AIB - American Institute of Baking. Lab in Manhattan, Kansas.

<https://www.aibonline.org/aibOnline/Documents/EN/DevelopYourProductSolutions/AIBTextureAnalysisProcedures.pdf> (2017-03-01)