

## Corn Tortilla Chip Breaking Force by Puncture

### *AIB Standard Procedure*

### 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:

- Fracturability
- Brittleness

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



Figure 1: TVT Texture Analyzer

### Scope

- Determination of breaking force for tortilla chip by single cycle puncture – AIB Standard Procedure.

### 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-SP0.5, Spherical probe 0.5" (inch) diameter, stainless steel  
(Figure 2a)  
Part number: 67.31.12



Figure 2a: P-SP0.5

#### Rig

HDS + HDSIH18, Heavy Duty Stand, Insert with 18 mm Ø hole (Figure 2b)  
Part number: HDS: 67.50.80; HDSIH18: 67.50.82

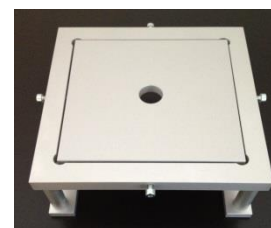


Figure 2b: HDSIH18

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## Profile settings

### Setting Parameter

Single Cycle Compression

Sample height [mm]	5.0
Starting distance from sample [mm]	7.0
Compression [mm]	6.00
Initial speed [mm/s]	3.0
Test speed [mm/s]	1.0
Retract speed [mm/s]	10.0
Trigger force [g]	10
Data rate [pps]	200

## Sample preparation

Take the samples from their packaging just before testing and place it centrally over the hole of the rig. Storage and handling of the samples might influence the result and should thereby be kept constant. Select samples with uniform shape and size.

## Curve Description

In Figure 3 a typical Force–Time curves is illustrated. The maximum peak<sup>+</sup> force value is here used for the break force. The greater the distance to the maximum force, the greater is the fracture resistance.

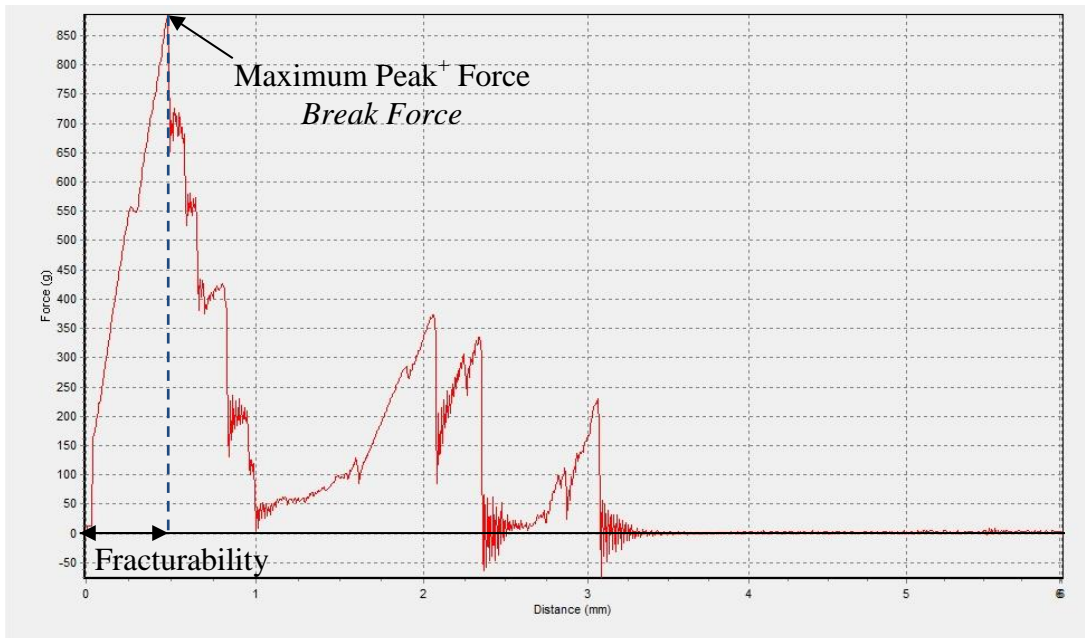


Figure 3: Break force test for tortilla chips.

## Data Analysis

The force required to compress the sample to a certain distance is here defined as break force and can be measured in the units [g] or [N]. Fracturability is given in [mm]. 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)