Tostada Shell Measurement by 3-Point Bend Breakage, 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:

- Breaking Force
- Toughness

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

Scope
- Determination of breaking force and toughness for tostada shell by single 3-point bend breakage, 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.

Load cell (recommended) 5 - 10 kg

Breaking Rig Set
Part number set: 67.50.45

Consisting of:
P-BP70A, Break probe 70 mm, aluminum (Figure 2a), Part Number: 67.11.70

R-TPBR, Three point bend rig (Figure 2b)
Part Number: 67.50.40
Profile settings

Setting Parameter

Single Cycle Compression

Sample height [mm] 2.0
Starting distance from sample [mm] 5.0
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

The gap between the supports on the rig should be set to 2 inches (50.8 mm). Take the samples from their packaging just before testing and place it centrally over the 3-point bend 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-Distance curve is illustrated. The maximum peak force value is here used for the break force. The greater the distance to the maximum force, the tougher is the sample.

Figure 3: Break point measurement of tostada shell/chips.
Data Analysis
The force required to break the sample is here defined as the break force and can be measured in the units [g] or [N]. The distance to the break point is here defined as the toughness. Except raw data (force, time and distance) the program also directly provides calculated results such as mean value and standard deviation.

Reference
AIB Corn Tortilla Chip and Tostada Shell Measurement. AIB – American Institute of Baking, Lab in Manhattan, Kansas.