

Biscuits & Cookies Hardness & Fracturability by Penetration Test

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:

- Hardness
- Fracturability
- Crispness

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



Figure 1: TVT Texture Analyzer

Scope

- Determination of hardness and fracturability of biscuits and cookies by single cycle penetration test.

Method Description

The recording of the measurement data commences once the probe reaches the pre-set trigger force. The probe will then penetrate the sample to a pre-defined distance. After penetration, 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-CY02S, Cylinder probe 2 mm diameter, stainless steel (Figure 2a)

Part number: 67.30.02



Figure 2a: P-CY02S

Rig

R-HDS + HDSIH10, Heavy Duty Stand, Insert with 10 mm Ø hole (Figure 2b)

Part number: HDS: 67.50.80; HDSIH10: 67.50.81

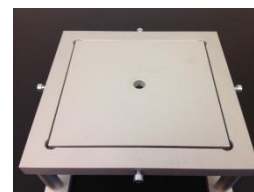


Figure 2b: HDSIH10

Profile settings

Setting Parameter

Single Cycle Compression

Sample height [mm]	12.0
Starting distance from sample [mm]	5.0
Compression [mm]	2.00
Initial speed [mm/s]	1.0
Test speed [mm/s]	0.5
Retract speed [mm/s]	10.0
Trigger force [g]	5
Data rate [pps]	333

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.

Curve Description

In Figure 3 a typical Force–Distance curve is illustrated. The various peaks in the graph are the hardness of the biscuits at different distances. Fluctuations might be due to different layers or large inclusions (fruit, nuts or chocolate). The total hardness of the biscuit is represented by the area under the curve. The fracturability is here represented by the distance to the first peak force.

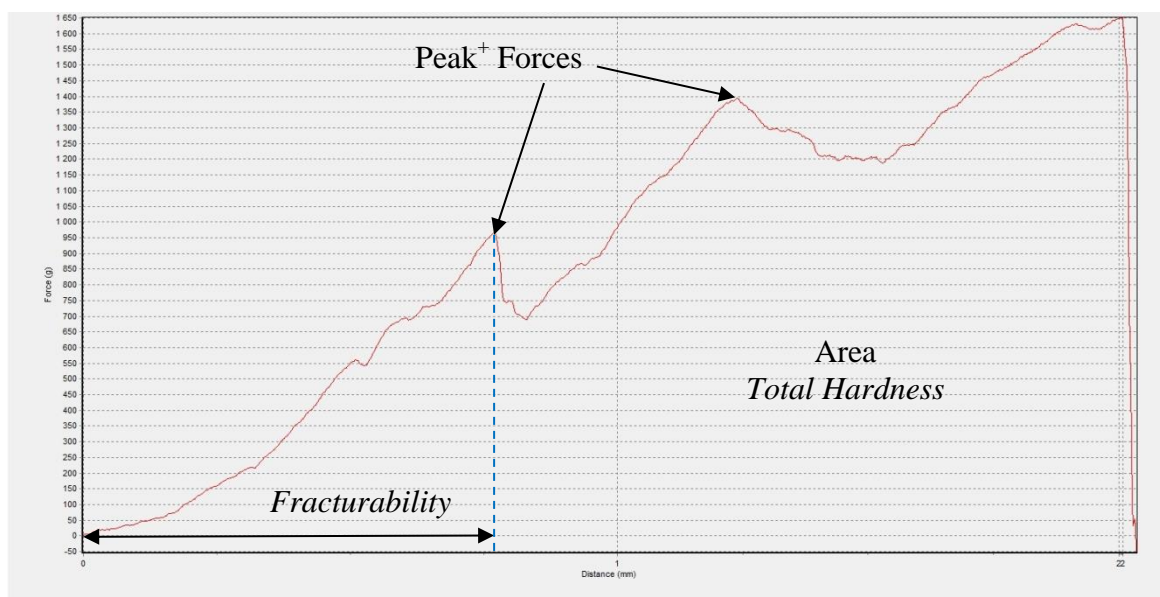


Figure 3: Penetration of a short bread biscuit.

Data Analysis

The force required for penetrating the sample can be measured in the units [g] or [N]. The fracturability is measured in [mm]. Except raw data (force, time and distance) the program also directly provides calculated results such as *mean value* and *standard deviation*.