Margarine & Butter Firmness by Cutting

**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
- Cutting Force
- Consistency
- Stickiness

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

![Figure 1: TVT Texture Analyzer](image1)

**Scope**
- Determination of margarine & butter firmness by cutting test.

**Method Description**
The recording of the measurement data commences once the probe reaches the pre-set trigger force. The probe will then cut into the sample to a pre-defined distance. When the pre-defined distance is reached, 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**
Cutting wire, 90 mm frame with 0.4mm wire. (Figure 2)
Part number: 67.13.95

![Figure 2: 67.13.95 (P-CW9004)](image2)
Profile settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Parameter</th>
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<tr>
<td>Single Cycle Compression</td>
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<tr>
<td>Sample height [mm]</td>
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<tr>
<td>Starting distance from sample [mm]</td>
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<td>Compression [mm]</td>
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<td>Initial speed [mm/s]</td>
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<td>Retract speed [mm/s]</td>
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<td>Trigger force [g]</td>
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<tr>
<td>Data rate [pps]</td>
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</table>

Sample preparation
Take the sample from its packaging just before testing. Place the sample under the probe and commence the measurement, Figure 3. Work quickly, since the sample is sensitive for the surrounding temperature. If the same sample is used for several measurements, make sure that there is sufficient space between the cuts. Storage, temperature and handling of the samples might influence the result and should thereby be kept constant.

Figure 3: Sample set-up
Curve Description
In Figure 4 a typical Force-Distance curve is illustrated. The cutting force resistance, here defined as the
firmness is the mean force value of the plateau, while the total work of cutting is here given by the area
under the curve.

![Graph showing Force vs. Distance](image)

Figure 4: Cutting test of margarine

Data Analysis
The force required to cut into the sample to a certain distance is here defined as the firmness (taken at the
plateau force) 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.