Gelatin, Bloom Strength by Penetration

ISO:9665

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
- Rupture force
- Elasticity
- Stickiness
- Adhesiveness

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

![TVT Texture Analyzer](image1.png)

Figure 1: TVT Texture Analyzer

Scope
- Determination of Bloom strength by single cycle penetration test, ISO:9665.

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-CY0.5, Cylinder probe 0.5 inch diameter, perspex
Part number: 67.32.13 (Figure 2)

Bloom Jar for testing,
Part number: 67.32.90

![P-CY0.5](image2.png)

Figure 2: P-CY0.5
Profile Settings

Setting Parameter
Single Cycle Compression

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample height [mm]</td>
<td>60.0</td>
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<tr>
<td>Starting distance from sample [mm]</td>
<td>5.0</td>
</tr>
<tr>
<td>Compression [mm]</td>
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<td>Initial speed [mm/s]</td>
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<tr>
<td>Test speed [mm/s]</td>
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<tr>
<td>Retract speed [mm/s]</td>
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<tr>
<td>Trigger force [g]</td>
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</tr>
<tr>
<td>Data rate [pps]</td>
<td>200</td>
</tr>
<tr>
<td>Adhesiveness</td>
<td>Marked</td>
</tr>
</tbody>
</table>

Sample preparation

Prepare the gel solution by adding gelatin into cold water (concentration of standard solution is 12.5% w/v). Use a stainless steel or glass rod to stir the solution before covering it up and letting it soak for 3 hours at a temperature below 22°C. Thereafter, heat the container to 60°C (do not exceed) on a magnetic heat-stirrer for approximately 15 minutes. Ensure that the gelatin is completely dissolved and then pour it into standard bloom jars. Cover the jars after 2 minutes and leave them to condition for 17 hours in a water bath with a temperature of 10°C. When the solutions are ready, place the bloom jar centrally under the probe and start the measurement.

Curve Description

The maximum peak force, at the penetration depth of 4mm, is defined as the Bloom Strength (g) of the gel. In food industry, the Bloom Strength value is normally between 150 – 200g. If the Bloom Strength exceeds 400g, reduce the concentration of the solution to 6.67% w/v, (single Bloom).

Data Analysis

The force required for penetrating the sample can be measured in the units [g] or [N], however, the Bloom Strength is measured in [g]. The elasticity 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.