Application manual No. 054

Production: GUMMY CONFECTIONERY

Objective: To investigate the firmness and springiness of gummy confectionery

Type of action: Compression test

Test mode settings:

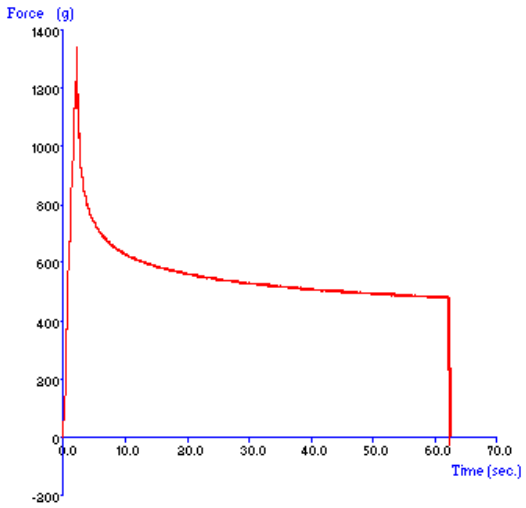
Speed	Test mode	Trigger	Target	Hold
1 mm/s	Strain (c)	5 gf	20%	60 sec

Accessory:
ϕ36 mm cylinder probe, Platform

Test Set-Up:
This test assumes that the surface of the sample is smaller than the diameter of the probe being used. Place the sample centrally under the cylinder probe, avoiding any irregular or non-representative areas.

Before carrying out the test using '% strain' measurement one must calibrate the probe to acknowledge the texture analyzer test surface (which is recorded as 100% strain). To do this, lower the probe, so that it is close to the test surface. Click on “Height Calibration” and specify the distance that you want the probe to return to, after sample compression, for each test - e.g.20mm is suggested.

Typical plots:



The above curve was produced from a gummy sweet, tested at 20C.

Observations:
Once the trigger force of 5g is attained, the probe proceeds to compress the sample to 20% of its original height. It holds at this distance for 60 seconds and then withdraws from the sample to its starting position. The above plot illustrates a force-time (or distance) curve which shows the characteristics of a gum firmness and springiness test.

Data Analysis:

☒Max Force

☒Force after hold

Results

Sample	Mean Maximum Force 'Firmness' (+/- S.D.) (g)	Mean Ratio 'Springiness' (+/- S.D.) (%)
A	1363.2 +/- 118.1	35.6 +/- 0.6

Notes:

- It may be necessary to modify the test to compress to a lesser/greater extent. This will subsequently decrease/ increase the 'Firmness' values. Any values obtained are only relative at the specified distance to which they are compressed.

- It is important to ensure that the samples are of the same height otherwise when the Texture Analyser compresses by 20% of the sample height the distance travelled by the probe will vary.

- Storage, packaging and handling of the sample before testing are considered variable conditions under which the sample is tested. It is important for comparison purposes to identify these conditions and keep them constant when reporting results of firmness tests.

- When attempting to optimize test settings it is suggested that the first tests are performed on the hardest samples to anticipate the maximum testing range required and ensure that the force capacity allows testing of all