**Production:** BAGELS

**Objective:** Firmness measurement of bagel crumb by compression with a probe

**Type of action:** Penetration test

**Test setting:**

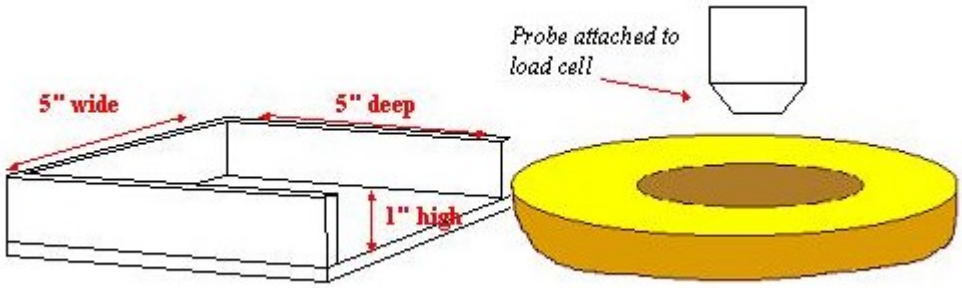
| Speed | Test mode | Trigger | Target | Hold |
|---|---|---|---|---|
| 1.7 mm/s | Distance (c) | 10 gf | 10 mm | 0 sec |

**Accessory:**

ϕ18 mm cylinder probe, Platform

**Sample Preparation:**

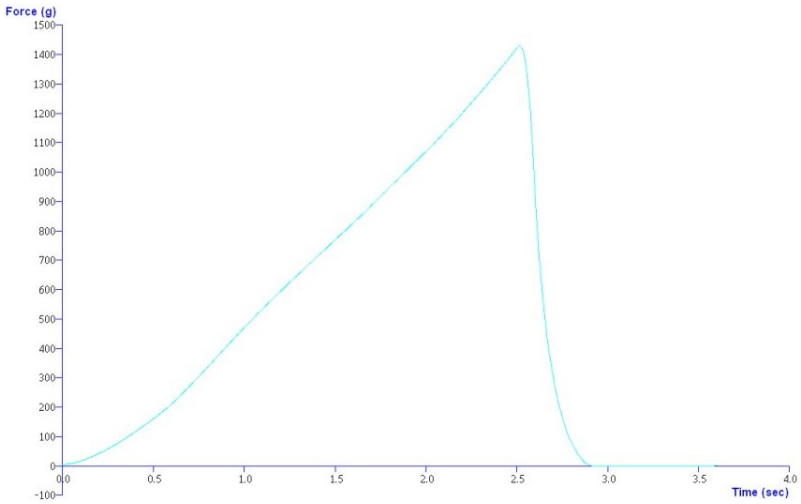
After cooling for 1 hour, bagels are double bagged and held at room temperature until further testing. Products are generally tested on days 1, 3 and 7 after baking. On each testing date, approximately 5 bagels of each variable are sliced (using the above template to ensure that the bagels are 1" thick). Three to 5 measurements can be obtained per bagel, resulting in 15-25 peaks per variable per test day.




**Test Set-Up**:

Each cake sample was positioned centrally under the probe and the test commenced. Analysis was conducted only after all of the tests were completed and archived for each cake set.

**Typical plots:**



**Data Analysis:**

☒Max Force

**Results**

Each time a measurement is taken, the maximum peak force value is recorded and the average and standard deviation are calculated.

**Notes**:

- This method is from a collection of procedures for testing the texture of common bakery products with the Texture Analyzer. These procedures have been developed by and are used at the American Institute of Baking's Experimental Bakery Lab in Manhattan, Kansas.
- It is the philosophy of the researchers at the AIB to have extremely flexible protocols for texture testing. Bakery products come in every imaginable type and shape, so meaningful textural comparisons must account for the different product geometry's. These test procedures typically manage differences in geometry by reducing the products' size to a common denominator.
- Generally, the objective of most of these tests is to measure the firmness and shelf life of a baked product. Since the bulk of these protocols address sample handling, they can and should be modified slightly if the test objective is different (eg springiness, cohesiveness, resilience, etc).
- These protocols are simply starting places for developing test methods which are suitable for your own products. A researcher should be comfortable modifying the sample handling protocols, test speeds and distances to accommodate any specific purposes.