

Production: FRENCH VANILLA ICE-CREAM

Objective: Comparison of the shearing force of two different brands of ice-cream using a knife blade

Type of action: Cutting test

Test mode settings:

Speed	Test mode	Trigger	Target	Hold
3 mm/s	Distance (c)	20 gf	35 mm	0 sec

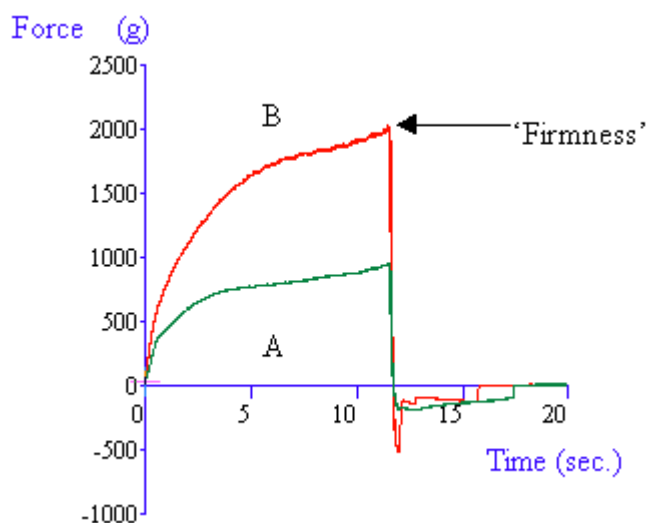
Accessory:

Blade of Warner Bratzler, Platform

Test Set-Up:

The Knife Edge is attached to the load cell carrier and raised to allow placement of the sample. The ice-cream container is removed from the place of storage just prior to testing and positioned centrally under the knife edge. The test is commenced.

Typical plots:



The above curves were produced from shearing two different brands of French vanilla ice-cream tested 15 seconds after removal from the freezer ($T = -14^{\circ}\text{C}$).

Observations:

Once the trigger force of 20g has been attained, the knife edge proceeds to shear to a depth of 35mm. At this point (maximum force), the probe returns to its original position at constant speed (10.0 mm/s). The greater this value the harder is the sample. The negative region of the graph, produced on probe return, is an indication of the adhesive property of the ice-cream and/or as a result of a certain weight of sample which has adhered to the probe on return. Clearly type B is harder than type A.

Data Analysis:

☒ Max Force

Results

Ice-Cream	Mean Maximum Force 'Hardness' (+/-S.D.) (g)
A	922.3 +/- 29.9
B	2123.2 +/- 106.7

Notes:

- It is important that the shearing depth, does not exceed 75% of the depth of the sample, otherwise base effect will be observed, thus producing an incorrect force profile.
- If the sample is much harder, a load cell with a higher force capacity may be required e.g. 25kg.
- 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 future samples.
- The method and results for this application study have been kindly provided by Texture Technologies Corp., USA.