

Production: MOUSSE

Objective: Comparison of penetration forces of full-fat and low-fat chocolate mousse using a cylinder probe

Type of action: Penetration test

Test mode settings:

Speed	Test mode	Trigger	Target	Hold
1 mm/s	Distance (c)	5 gf	10 mm	0 sec

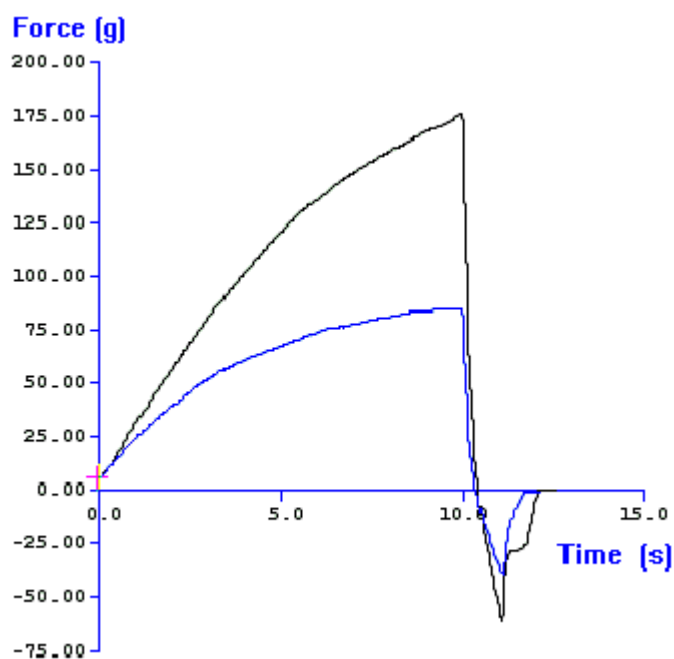
Accessory:

φ25 mm cylinder probe.

Test Set-Up:

Remove the samples from place of storage just prior to testing. Position the sample centrally under the probe. Commence the penetration test. Penetrate each sample only once.

Typical plots:



The above curves were produced from full-fat and low-fat chocolate mousse samples tested in containers with a diameter of 55mm and a depth of 60mm. The samples were tested immediately on removal from the refrigerator (5.0C).

Observations:

Force is seen to gradually increase as penetration depth increases in each case. The full-fat chocolate mousse however appears to require a considerably higher force to penetrate to the specified depth, compared to its low-fat counterpart which produces an almost 50% lower peak force. The full-fat mousse is therefore the firmer sample.

Data Analysis:

☒Max Force

Results

Mousse Type	Mean Max. Force 'Firmness' (+/- S.D.) (g)
Full-Fat	181.7 +/- 5.1
Low-Fat	80.1 +/- 5.5

Notes:

- Depending on the regularity of the surface (i.e. the contents of the container may not have settled as a flat surface), it may be necessary to increase the trigger force value slightly. This ensures that the test starts collecting data once there is full contact between the probe and product.
- The product may be tested directly from the container in which it was originally dispensed, so as not to damage the aerated structure. However, when comparing different samples try to ensure that the temperature, container size and the volume of the product dispensed are the same (and should always be specified) when reporting results.
- The distance of penetration to be set in the test mode will depend upon the depth of the sample within the container, the depth of the container, and whether the chosen container is tapered towards the base or not. The chosen depth should be such that cylinder probe does not come into contact (or indeed approach very close) to either the walls or the base during testing which could produce an erroneous result.
- During penetration of the cylinder, a large blip in the otherwise smooth curve may be observed. This is due to the compression of a large air pocket within the sample, care should be taken when dispensing the product into containers to avoid the formation of large air pockets.
- 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.