Production: HALVA

Objective: Measurement of hardness of two types of Halva using a cylinder probe

Type of action: Penetration test

Test setting:

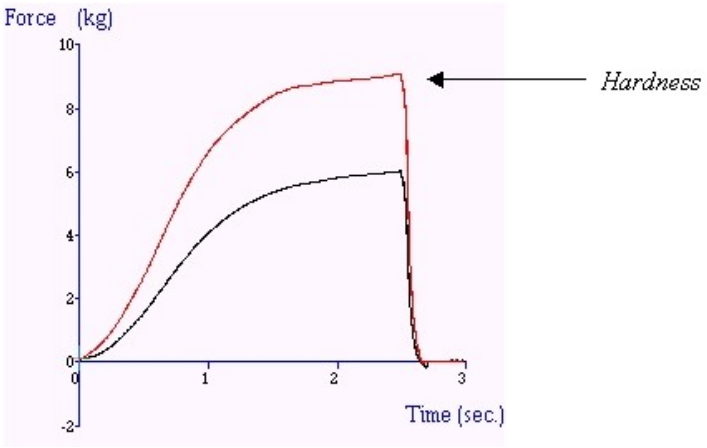
Speed	Test mode	Trigger	Target	Hold
2 mm/s	Distance (c)	50 gf	5 mm	0 sec

Accessory:

Cylinder probe with an area of 1cm^2, Platform

Test Set-Up:
Each sample container should be positioned under the probe in turn taking care to choose a testing region which is as flat as possible. After testing the same samples may be tested again choosing flat testing surfaces which are not too close to the wall of the container or to neighbouring holes caused by previous tests.

Typical plots:



The above curves were produced from tests carried out in the original sample containers at 23C.

Observations:
Once a trigger force of 50g has been detected on the surface of the sample the probe then proceeds to penetrate the halva to a distance of 5mm. After the probe has reached this distance it withdraws at 10.0mm/s to its start position. The magnitude of the absolute positive value corresponds to the 'hardness'. The larger the maximum positive force the harder is the sample.

Data Analysis:

☒Max Force

Results

Sample	Mean Max. +ve Force 'Hardness' (+/- S.D.) (kg)
Plain Halva	9.98 +/- 1.10
Halva with cocoa	5.76 +/- 0.58

Notes:

- When testing, penetration into the same sample container more than once may be required. If doing this, however, consideration should be taken as to the test hole proximity, i.e. penetration must not be carried out too close to neighbouring test holes within the same container, and tests must also not be carried out too close to the side walls. It would certainly be preferable to choose a constant testing position within the container as it is noticed that slightly different readings will be obtained when testing at the edge compared to in the centre of the container due to wall support and higher surface elasticity respectively.
- It may be necessary to adjust the penetration depth to a greater or lesser extent. When doing this, consideration should be taken of the base effect of the container, i.e. distance of penetration must not exceed 75% of the depth of the sample. This will subsequently increase both the firmness and resistance of probe withdrawal values. Any values obtained are only relative at the distance to which they are penetrated.
- Storage, packaging and handling of the sample before testing are considered variable conditions under which the sample is tested. It is important to identify these conditions and keep them constant when reporting results of firmness tests for comparison purposes.
- When attempting to optimise 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.