Production: DRY SPAGHETTI

Objective: Determination of the breaking strength of dry spaghetti using a Spaghetti Flexure Rig

Type of action: Compression test

Test mode settings:

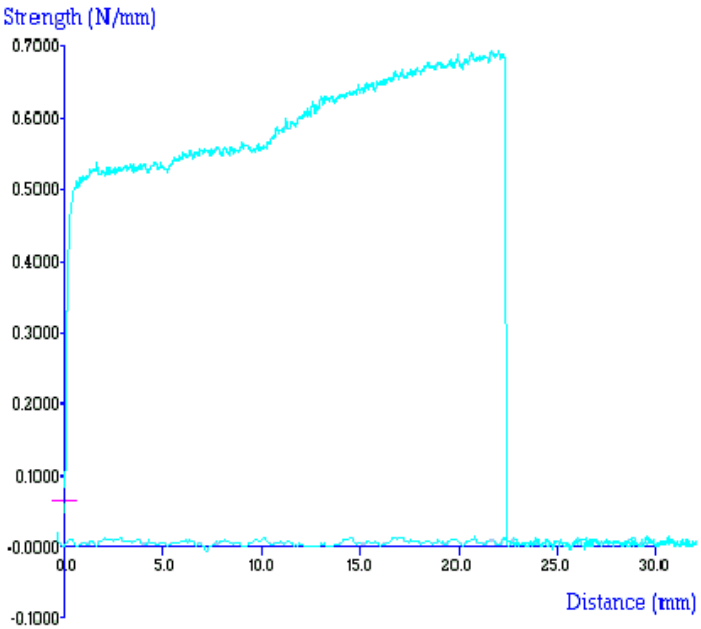
Speed	Test mode	Trigger	Target	Hold
2.5 mm/s	Distance (c)	15 gf	50 mm	0 sec

Accessory:
Spaghetti bending rig, Platform

Sample Preparation:
Remove samples from their packaging just prior to testing, to avoid ingress of moisture. Cut the strands to a constant length.

Test Set-Up:
The lower support indent should be positioned directly below the upper fixture to ensure correct vertical support of the samples. Position a strand into the indents of the rig and commence the test.

Typical plots:



The above curve was produced from dry 100% Durum wheat spaghetti (200mm).

Observations:
Once the trigger force is attained the graph proceeds to plot the effect on the spaghetti strand under compression. The spaghetti is flexed until it breaks. During the compression test attention should be paid to fluctuating force before the final break which would indicate weaknesses within the sample, e.g. checking.

Data Analysis:
☒Max Force

Notes:

- The measurement of distance at the break would give an indication of sample flexibility - the greater the compression distance, the more flexible is the sample.
- Before commencing each test ensure that there are no apparent weaknesses along the exposed sample length which would hence result in lower break forces and distance of break values.
- The gluten strength/quality of the parent semolina may determine the dry strength of the pasta. Breaking strength gives a measure of the strength of the dry pasta. This determines how well the product tolerates shipping and may indicate how well a product holds together upon cooking.
- Drying is the most critical as well as the most difficult step in pasta production. If pasta is dried too quickly, moisture gradients are created that crack, or check, the pasta. This is considered to be driven by the difference between environmental relative humidity (ERH) and pasta RH. Checking can occur during the drying cycle, but it can also occur up to several weeks after the pasta leaves the drier. This means that the product can check after it is packaged and sold. A test for this, such as the flexure procedure described above, would therefore be a useful monitoring procedure.
- 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.