Production: DOUGH / GLUTEN

Objective: Extensibility of dough and measure of gluten quality

Type of action: Tension

Test setting:

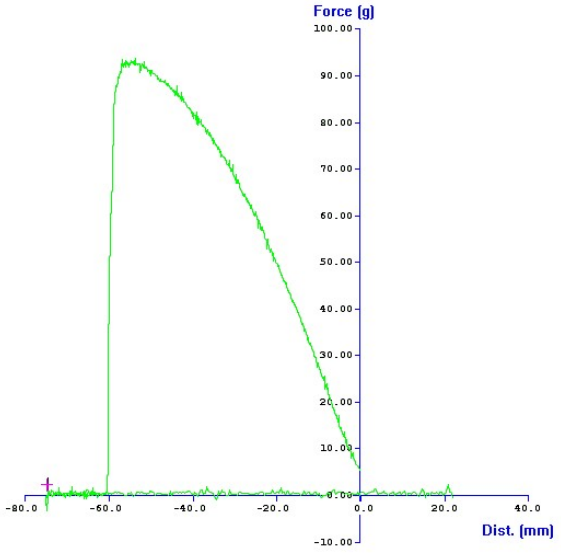
Speed	Test mode	Trigger	Target	Hold
3.3 mm/s	Distance (t)	5 gf	75 mm	0 sec

Accessory:
Dough extensibility rig

Sample Preparation:
Apply a small amount of oil to both sides of the teflon dough form, to avoid sample adhesion. Place a chosen mass of the prepared dough/gluten sample onto the grooved base of the form e.g. 15g. Position the upper block of the form on top of the sample and push down firmly until the two blocks come together. Remove excess dough cleanly from sides, using a knife/spatula and clamp the dough form in the form press for 40 minutes (this cuts the sample into strips, allows the dough/gluten to relax and prevents loss of moisture). Scrape off any excess dough/gluten sample that is forced out from the sides of the form. Loosen the dough press and carefully slide the upper form block back-wards over the grooved base to uncover the first dough/gluten strip. Tighten the press in this position, and using the upper form block as a cutting edge, score along the ridge of a groove to separate the strip of dough. To remove the strip of dough/gluten from the grooved base, dip the spatula in oil, and carefully slide it under the sample. Take care not to stretch or deform the dough/gluten sample. The first and last few strips may not be of full length, so these should be discarded.

Test Set-Up:
Position the Kieffer rig on the machine base. Ensure that the hook probe is covered with the plastic sleeve to prevent it from shearing through the sample. Lower the hook probe to just above the upper surface of the spring loaded clamp. Place the strip of dough/gluten onto the grooved region of the sample plate and, holding down the spring loaded clamp lever, insert the plate into the rig. Release the handle slowly. Commence the tensile test.

Typical plots:



The above curve was produced from dough tested at 20C.

Observations:
Once a trigger force of 5g has been attained the hook then proceeds to centrally extend the dough sample until its elastic limit (at the maximum force) is exceeded and the dough separates. At this point the distance is noted and used as an indication of dough extensibility.

Data Analysis:

☒Max Force

☒Peak Distance

Results

Sample	Mean Max. Force 'Resistance to Extension' (+/- S.D.) (g)	Mean Distance at Max. Force 'Extensibility' (+/- S.D) (mm)
A	97.7 +/- 7.3	60.8 +/- 3.9

Notes:

- When preparing the dough/gluten strips it is important that when the dough form is clamped there is very little excess of the sample extruding. If the excess dough/gluten is not removed effectively, during clamping time the ends of the strips will stick together and cause difficulty in separation, when the strips are required.
- If handling soft dough it may be necessary to place little stripes of plastic lametta in the grooves under the dough (as supplied with the Kieffer rig). These strips allows successful transfer of the sample to the testing platform. The strips are peeled from the dough before positioning the sample platform.
- When attempting to optimize test settings it is suggested that the first tests are performed on the hardest/most resistant samples to anticipate the maximum testing range required and ensure that the force capacity allows testing of all future samples.