

Production: PIZZA

Objective: Comparison of tensile toughness of oven baked and micro waved pizzas

Type of action: Tension test

Test mode settings:

Speed	Test mode	Trigger	Target	Hold
5 mm/s	Distance (t)	0 gf	45 mm	0 sec

Accessory:

Pizza Tensile Rig

Sample Preparation:

Cut the two batches of pizza into rectangular samples from the centre of the pizzas and place in the appropriate storage conditions until cooking. Cook three samples at a time according to the manufacturers instructions. Allow samples to cool to approximately 55C before commencing the test.

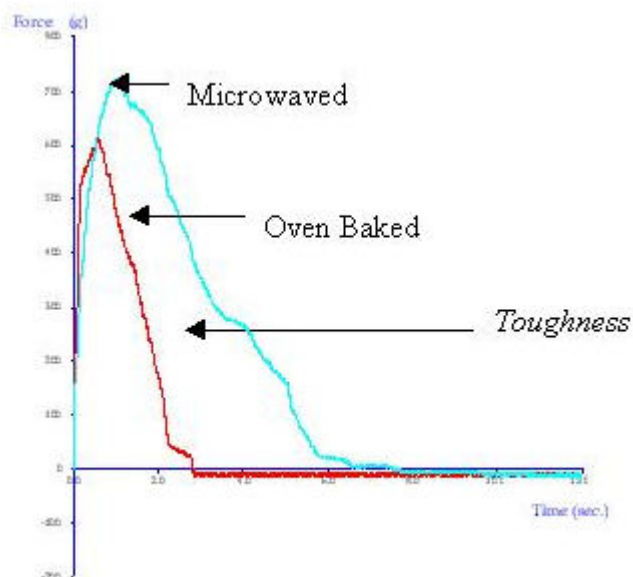
Test Set-Up:

Before carrying out the tensile test one must align and calibrate the 2 four pronged attachments to ensure that the distance between the upper and lower attachment is the same for each sample being tested (see below for instructions as to how this is done). Test the pizza strips individually by placing one end on to the lower four prongs and the other end on to the upper four prongs. When doing this one must try to avoid bending the sample.

Probe Calibration:

Lower the grips, so that they are close together. Click on CALIBRATE HEIGHT and specify the distance that you want the grips to start apart from each other for each test - e.g. 1mm is suggested.

Typical plots:



The above plots were produced from oven baked (12mins, 200C) and micro waved (3mins, high) cheese and tomato pizza samples (70 x 35mm) and tested at 55C.

Observations:

Once the OK button is clicked the test begins and the graph proceeds to plot the effect on the pizza under tension. When the extension limit is exceeded the pizza tears (observed as the peak tension force). The area is used as an indication of pizza toughness. It is quite clear that the micro waved pizza requires greater force to stretch (and is therefore tougher) than the oven baked pizza.

Data Analysis:

☒Area (+)

Results

Pizza type	Mean Area 'Toughness' (+/- S.D.) (g)
Oven Baked	651.3 +/- 43.5
Micro waved	447.7 +/- 40.3

Notes:

- Before commencing each test, ensure that there are no apparent weaknesses along the exposed sample length which would hence result in lower break force values.
- If measuring break distance in addition to area the variation in break distance values may be quite high. This is due to the inherent non-homogeneous texture of pizza.
- 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.