
Production: CHEWING GUM BONES

Objective: Comparison of uniaxial extensibility of chewing gum bones

Type of action: Tension test

Test setting:

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

Accessory:

Double c-clamp fixture, Platform

Sample Preparation:

Prepare the sample into strips of a constant specific length and width. It is important that the samples are representative of the whole sample length.

Test Set-Up:

Attach the upper tensile grip to the load cell carrier and secure the lower tensile grip to the base of the machine.

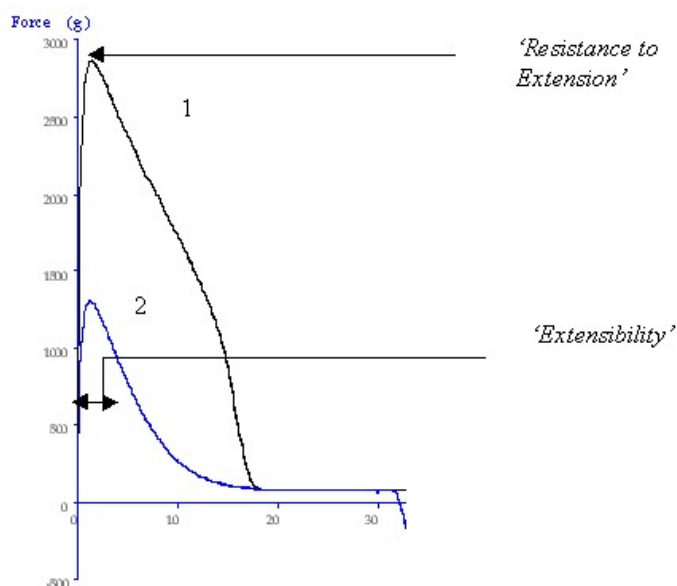
Calibrate the tensile grips to start from a set distance apart for each test e.g. 50mm (see probe calibration below).

Move the upper grip to a higher sample loading position so that when the sample is attached to the upper grip it is free to hang without contact with the lower grip, insert a sample and tighten the grip to secure the sample. Click on Move Probe and then Tools - Tare (to zero the weight of the upper grip and sample). Attach the sample to the lower grip. When doing this one must try to minimize the slack in the sample between the jaws without stretching the sample or over handling the test region.

Note: To protect the sample from the jaw faces of the grips, position pieces of card, e.g. 35x25mm on each side of the sample at both ends to protect it.

Probe Calibration:

Lower the grips, so that they are close together. Click on CALIBRATE PROBE and specify the distance that you want the grips to start apart from each other for each test - e.g. 50mm is suggested.

Typical plots:

The curves above were produced from testing two chewing gum bones, at 25C.

Observations:

Once the OK button is clicked the test begins and the graph proceeds to plot the effect on the bone under tension. When the elastic limit is exceeded the bone snaps (observed as the maximum tensile force). The greater the distance at the break point the more extensible the sample. It is quite clear that bone 1 is considerably more resistant to extension and is therefore tougher than bone 2. However, bone 1 and 2 are similar in extensibility. Clearly, there is high variation within these samples.

Data Analysis:

- ☒ Max Force
☒ Peak Distance

Results

Sample	Max. Force 'Resistance to Extension' (g)	Distance at Break 'Extensibility' (mm)
1	2859.9	1.49
2	1304.5	1.33

Notes:

- Before commencing each test, consideration should be taken to ensure that there are no apparent weaknesses along the exposed sample testing region which would result in lower force and distance values.
- The Data Analysis given is a general example for the analysis of a curve such as the ones above, any changes made to the test parameters or significant differences to the shape of the curve profile may require optimized
- As these products are temperature sensitive, it is important that the temperature is carefully controlled so that test data can be compared.
- 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.