Simple Method for Testing the Texture of Noodles

Figure 1:
Brookfield CT3 Texture Analyzer

Noodle texture is typically studied using an instrument (called a Texture Analzyer – see Figure 1). The preferred test mode is a compression cycle because consumers compress noodles in their mouths by chewing. Since the test should represent how we eat the noodles, logic suggests a compressive test is most appropriate.

Sample preparation is critical when testing noodles, either by machine methods or by sensory panelists. Cooking time will greatly affect noodle firmness, so precise sample preparation is mandatory. One example is explained in this article.

Figure 2:
Ramon noodles in Ottawa Cell before Compression Plate begins its Downward Descent

In this test of Raman type noodles, the noodles only (without the seasoning packet) were placed into boiling water for four minutes, after which they were immersed in cold water for thirty seconds to stop the cooking. Then they were drained and placed into a covered container awaiting testing. A measured amount, in this case 70 grams, was placed into an Ottawa Cell and lightly packed. See Figure 2.

The test measurement was obtained by forcing the mass of noodles through the perforated base of the Ottawa Cell, while recording the force required to achieve the compression. See Figure 3. The force remains relatively small until 20mm of distance traveled by the compression plate, which is roughly 40% compression by volume for the noodles in the Ottawa Cell. Then the force climbs to between 15,000 and 20,000 grams over the next 20mm, which is roughly 60% compression. Multiple tests were run on different samples of cooked noodles to verify repeatability of the test. Average time per test was on the order of 15 seconds. Sample prep and cleanup required significantly greater time.

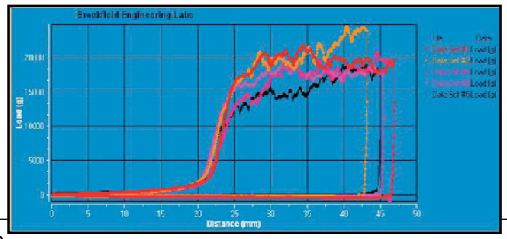

Figure 3:
Compression Curves for Multiple Samples of Raman Noodles show Compression Force in grams vs. Downward Movement of the Compression Plate

The area under this curve during compression turned out to be the best statistic to indicate noodle firmness. The table in Figure 4 summarizes the test data.

Brookfield Engineering Labs, Inc.

STATISTICAL REPORT

TexturePro CT V1.2 Build 9

#	Sample Description			Results
	Product Name	Batch Number	Sample #	Hardness Work
				Cycle 1
				mJ
1	Nong shim Noodle	Shim Ramyun	2	4574.3
2	Nong shim Noodle	Shim Ramyun	5	4136.3
3	Nong shim Noodle	Shim Ramyun	6	4159.2
4	Nong shim Noodle	Shim Ramyun	7	4047.6
5	Nong shim Noodle	Shim Ramyun	8	3620.8
			Minimum	3620.8
			Maximum	4574.3
			Average	4087.6
			Standard Deviation	376.6

Figure 4:
Table of Data showing Energy for Each Compression Test Cycle

The average work to compress the noodles is slightly higher than 4,000 milli-Joules and the standard deviation is only 376 mJ, which is less than 10% of the actual work performed.

Simple tests such as this are quite useful when refor-

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