

## Reference and Quality Control Material testing with the Nima Peanut Sensor

### Background

The Nima Peanut Sensor from Nima Labs represents a novel consumer testing device with a target limit of detection of [10 ppm peanut](#).

The purpose of this study was to test the performance of the Nima Peanut Sensor using a wide range of commercially available quality control (QC) and reference materials (RM) obtained from various accredited providers including:

- The Food Analysis Performance Assessment Scheme (FAPAS) division of the Food and Environment Research Agency (FERA)
- The Dienstleistung Lebensmittel Analytik GbR (DLA)
- The LGC Standards (LGC) division of the LGC Group



### Methodology

The Nima Peanut Sensor was operated per the manufacturer's instructions. Six replicates of each test sample were prepared using ~0.3 g portions. One triplicate set of each sample was analyzed by each of two analysts using three Nima Peanut Sensors. Specific samples of interest were then chosen for additional testing on a separate day.

Overall 29 different food samples were tested in this study, which included a variety of peanut spike levels and blanks spanning the following food matrices:

Milk chocolate	Almond flour	Baked cookie	Potato flour	Liquid chocolate
Tomato soup mix	Biscuit	Wheat flour	Garlic powder	

### Results

A total of 174 tests were performed with the Nima Peanut Sensor. The results for these tests are summarized below:

<u>Peanut target level</u>	<u># of samples</u>	<u># of Nima tests</u>	<u>Peanut found</u>	<u>Peanut not found</u>
1 ppm or below	11	66	1	65
2 ppm – below 10 ppm	3	18	12	6
10 ppm or above	15	90	89	1

## Discussion

This study was conducted over the course of two separate days utilizing peanut test capsules from two separate lots. For blank samples or samples expected to contain less than 1 ppm peanut ( $n = 11$ ) the Nima Peanut Sensor reported one 'false positive' out of 66 total tests (98.5% accuracy). In an effort to test for potential cross-reactivity of the Nima Peanut Sensor 'blanks' were selected that were contaminated with 20-50 ppm of various legumes (such as soy and lupin) or tree nuts (such as almond and hazelnut). None of these blanks ( $n = 4$ ) yielded a false positive result.

Samples containing peanut at levels above 2 ppm but below the 10 ppm reported detection limit of the Nima Peanut Sensor ( $n = 3$ ) were detected by the device in 12 of 18 tests (~67% of the time). One sample with a target level of 5 ppm peanut in a chocolate matrix was responsible for all six (6) false negative results observed.

In analyzing samples with target levels of peanut contamination at or above the 10 ppm detection limit of the Nima Peanut Sensor ( $n = 15$ ) it was found that 89 of the 90 tests yielded positive results (98.9% accuracy), while one (1) of six (6) replicates performed using a chocolate matrix with a target level of 15 ppm reported a false negative.



**\*Note- BioFront Technologies is not an accredited testing laboratory. For additional information about this study, please contact Nima Labs.**