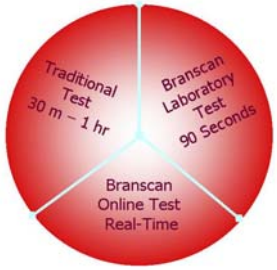
Application Note

Contamination Analysis In Gluten



Definition

Gluten is the protein derived from wheat and other grains such as maize, which gives dough its elastic character.

The Problem

In the milling of rice and flour naturally occurring impurities (brown and black specks) can be found which remain from the initial product. Impurities can also be introduced into the product through the production process and where dryers are employed and scorched particles may occur. The amount of specks is the determining factor of the final appearance, grade and purity of the product and ultimately the final selling price. In some cases speckiness of the product can result in the rejection of whole batches.

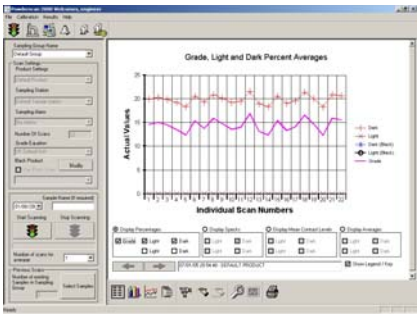
Current Method of Detecting Contamination

The current method for analysing the number of specks relies on taking a sample from the production process or batch sampling the final product. Where possible a set quantity of Gluten is dissolved in a special solution and the contamination measured on filter paper (Filter Test). These methods are subjective, destructive, non repeatable and with Gluten can take up to 4 hours to complete.

Powderscan Method

Powderscan uses digital image analysis to detect brown and black specks in Gluten.

The Powderscan P2000 laboratory system, is able to count the number of brown and black specks in a given area using the digital imaging analysis. From start to finish, a result is obtained within a couple of minutes. The minimum speck size can be set so that only those specks above a preset minimum size are counted.



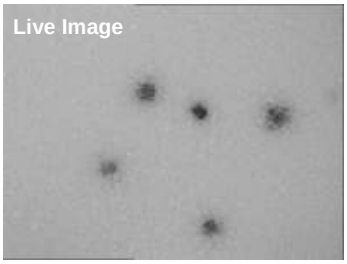
The Powderscan P4000 online system is the only system able to monitor in real-time to instantly detect impurities and stop production.

Result of Tests

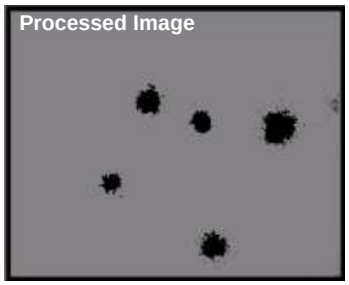
A variety of samples were tested from the same manufacturer. The samples had been previously graded using the conventional method. Using a Powderscan P2000 laboratory instrument, Branscan was able to detect all specks down to better than 20 microns.

Below are two images as viewed on the Powderscan P2000.

In the live image you can barely see the impurities.



In the processed image, the contamination of 100 microns or above can be clearly seen.



Branscan was able to give a speck count corresponding to those particles shown in the processed image, some of which could not be seen by the naked eye.

Data can be displayed on the Powderscan software as both speck counts and speck percentages, however the operator can also retrieve information such as average speck size, and, if a correlation has been set up, a filter number. By using the Powderscan instruments, repeatable values can be achieved regardless of who uses the instrument. This means that the quality results given to customers are more reliable and more representative of the product.

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