Application Note

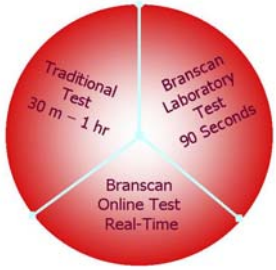
Contamination Analysis In Chemical Powder

Definition

A substance composed of chemical elements or obtained by chemical processes.

The Problem

In the manufacture of Chemical Powder, impurities can be introduced into the product through the production process and where dryers are employed and scorched particles may occur. Contamination is the determining factor of the final appearance, grade and purity of the product and ultimately the final selling price. In some cases contamination can result in the entire waste of whole batches.



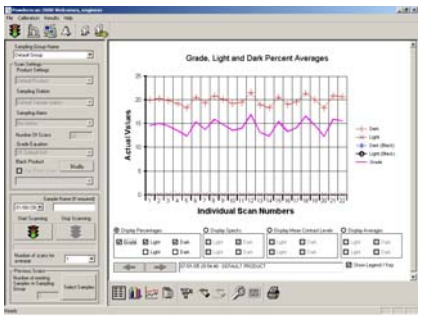
Current Method of Detecting Contamination

There are currently two methods for analysing the contamination of Chemical Powder and both involve taking a sample from the production process or batch sampling the final product. Either a set quantity of Chemical Powder is suspended in solution and the specks precipitated out, or an operator visually checks through the product and manually counts the number of specks. Both methods take time and are non repeatable.

Powderscan Method

Powderscan uses digital image analysis to detect contamination in Chemical Powder.

The Powderscan P2000 laboratory system, is able to count the number of particles in a given area using the digital image of the powder. 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.



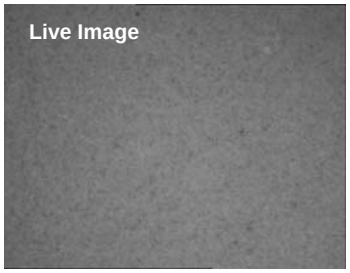
The Powderscan P4000 online system is the only system able to monitor contamination in real-time to instantly detect contamination and stop production.

Result of Tests

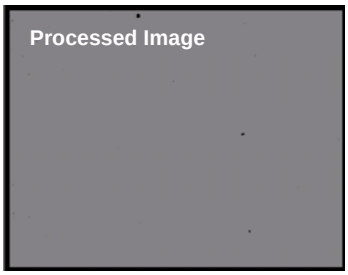
A variety of samples were tested from the same manufacturer. The samples had been previously graded using the conventional method. Using a Powderscan P2000 laboratory instrument, Branscan was able to detect all specks down to better than 20 microns.

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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