



MOISTURE MEASUREMENT OF CHEMICAL POWDERS WITH THE BERTHOLD MICRO-MOIST

The Requirement: Chemical manufacturers have the requirement to determine moisture levels in bulk powders for quality purposes and commercial purposes. Often that requirement is met by physical sampling for lab determination because most on-line measurement technologies do not penetrate the product and are therefore only representative of surface moisture. These technologies are also adversely affected by variations in color, grain size and temperature.

Sampling for lab measurement has several draw-backs. 1.) Results are not “real time” and therefore cannot be used for process control. 2.) Chemical toxicity or reactivity may create difficulties for sampling. 3.) Sampling error may also introduce problems in representative measurement.

The Solution: Recently a major US manufacturer installed a Berthold LB 356 Micro-Moist on-line moisture analyzer (Now LB 456) in the drop chute off of a centrifuge. A special arrangement was built by the customer to hold the product in the chute, until sufficient material filled the measuring path. A repetitive Measure-Release cycle was used to determine the moisture of the chemical powder. Measuring times were of the order of 5 seconds. Moisture was in the range of 12 to 18%.

This technique proved very successful. The Berthold LB 356 Micro-Moist succeeds where other technologies fail. Berthold technology relies on numerous microwave frequencies penetrating the product every half-second, with the instrument basing its moisture reading on changes in microwave attenuation and/or phase shift. This multi-variable approach is not only more representative because it penetrates the product, but is also more immune to influences that may affect the measurement at any single frequency. Microwave measurements are free of influences by variation in product size, color and temperature.

The on-line measurement meant that this customer could reduce the worker exposure to the toxic powder, required by their current sampling procedure.

The non-contacting nature of the measuring arrangement means low maintenance.

This installation did not require bulk density compensation. Each new application should be evaluated to see if density compensation may be required.

Testing Results: Accuracy for these type installations are expected to be better than +/- 0.5% with repeatability better than +/- 0.3%.

Expected Benefits:

1. Faster moisture feedback for process control.
2. Reduced worker exposures to toxics
3. More representative moisture measurement due to total product measurement.