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# Drying

## Material Flow Solutions, Inc.

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**Drying.** Materials dry at different rate depending on the amount of moisture in the sample and where the moisture is bound. Exposing a bulk material to a prescribed relative humidity will cause either drying or moisture pickup, depending on the affinity of the material to absorb moisture. Bulk materials tend towards an equilibrium moisture content based on the local relative humidity surrounding the sample. Moisture sorption isotherms describe this behavior. Moisture migration through process equipment depends on thermal gradients, as well as moisture isotherm information.

At Material Flow Solutions, Inc., we measure the moisture sorption isotherm data as well as the moisture drying and pickup rates. These are used with mathematical model of process equipment to determine the migration of moisture through process equipment. We can

predict when the bulk material will wet-out and form cohesive masses in process equipment. We can predict clumping, caking, and other moisture problems in any process equipment subject to prescribed environmental conditions.

**PRACTICAL APPLICATIONS** of understanding *drying* parameters include, but are not limited to:

- ✿ Prevent wet-out of bulk solid materials
- ✿ Predict drying
- ✿ Optimize heat tracing
- ✿ Prevent hang-ups
- ✿ Eliminate clumping
- ✿ Evaluate product packaging
- ✿ Increase customer acceptance of product
- ✿ Product design to limit moisture effects
- ✿ Segregation prevention
- ✿ Agglomeration studies