

Jenike & Johanson Test Equipment



The Jenike Fluidization Segregation Tester

U.S. Patent 6,487,921 B1
ASTM Standard D6941-03
Capabilities



the sample contained within each section to drop into its appropriate collection cup. This unique design provides fast, easy sample collection.

Split the samples as needed, using proper techniques, to obtain the correct quantity required for analysis.

Primary components:

- Screw-on sealing cap
- Paper filter media (1 package of 100)
- Air/Particle separation chamber / Funnel
- Upper sample chamber section
- Middle sample chamber section
- Lower sample chamber section
- Porous sintered metal air distributor
- Glass sample collection containers (3)
- Air pressure/flowrate and timing controller
- Requires 110v power and regulated air supply

The Jenike Fluidization Segregation Tester measures the tendency of powders or other bulk solids to segregate by the fluidization segregation mechanism.

- Simulates the top-to-bottom segregation effects of gas flow through a bulk material, e.g., upon filling a bin, rapid blending, or pneumatic conveying
- Allows comparison of one material to another
- Provides computer controlled gas flow rate for repeatable, operator independent testing

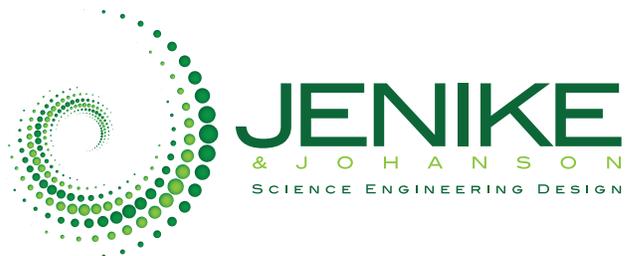
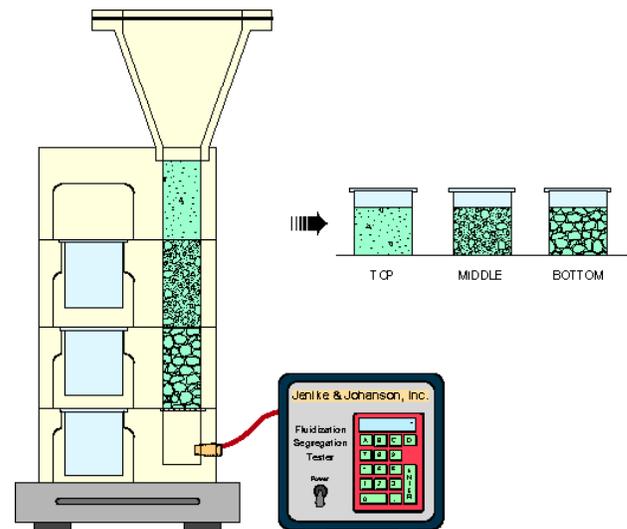
Fluidization can cause vertical segregation, i.e., horizontal layers of fines and coarse. Fine particles generally have a lower permeability than coarse particles and therefore tend to retain air longer. Thus on filling a hopper, the coarse particles are driven into the bed while the fine particles remain fluidized near the top surface. This can also occur after tumble blending if the material is fluidized during blending. Air entrainment often develops in materials that contain a significant percentage of particles below 100 microns in size. Fluidization segregation is likely to occur when fine materials are pneumatically conveyed, filled or discharged at high rates, or if gas counterflow is present.

General testing procedures

Pour a measured sample into the assembled tester, using the top of the expansion chamber as a funnel. Place the cap and filter on top of the funnel, and secure.

Set the air flow rate and duration on the controller. The fluidization/deaeration cycle proceeds automatically.

Once deaeration is complete, rotate the handle to cause



The Jenike Sifting Segregation Tester

ASTM Standard D6940-03



Capabilities

The Jenike Sifting Segregation Tester measures the tendency of powders or other bulk solids to segregate by the sifting segregation mechanism.

- Simulates the side-to-side segregation effects of a free-flowing material discharging from a hopper
- Provides a trend through a fill/discharge cycle
- Allows comparison of one material to another
- Allows multiple fill/discharge cycles
- Typically provides both mass flow and funnel flow discharge patterns

Sifting, which is a process by which smaller particles move through a matrix of larger ones, is the most common method of segregation. This mechanism is most likely to occur when handling particles with different particle size and when there is interparticle motion, such as during filling, transfer, etc.

General testing procedure

Fill the upper hopper, and then discharge the material to the lower hopper. Steep and shallow angle cones are provided for use as the upper or lower hoppers. The preferred method is to use the steep hopper above the shallow hopper. Discharge the contents of the lower hopper and collect the samples for analysis.

A variation on this test method is to recirculate the material until a steady-state is reached. This tester is specially designed to make this procedure easy. By recirculating the material, the "signal strength" of the material's segregation tendency is intensified, and the initial state of the blend is less critical.

Primary components:

- Two hoppers with steep cones
- Two hoppers with shallow cones, each with a slidegate and stainless steel support legs

- Pyrex sample collection containers (4)

References

One use of this type of tester is described in "Bench Scale Segregation Tests as a Predictor of Blend Sampling Error," by J.K. Prescott, P.J. Ramsey, et al, presented at the AAPS 2000 annual meeting (copies are available upon request).

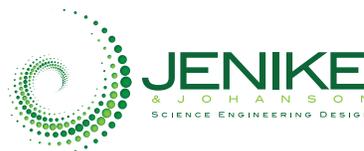
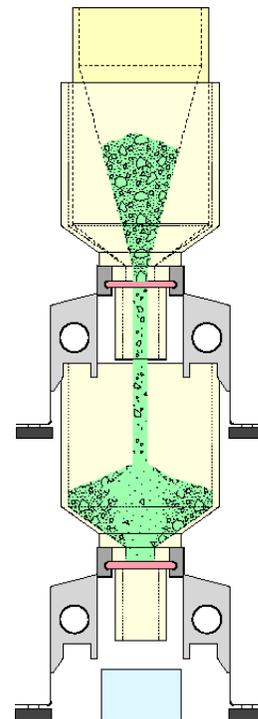
Equipment availability (both testers)

For additional information or pricing, contact Greg Mehos at (978) 649-3300, or info@jenike.com.

Professional services

Our test equipment is invaluable if your company handles numerous materials in various applications, needs data for quality control purposes, or if you continuously develop new materials. However, if you need to analyze a limited number of materials or solve a specific handling problem, but do not have the time or budget to develop your own lab capabilities, we can still help.

Jenike & Johanson, Inc. is a specialized engineering firm whose primary focus is to provide a means for companies to obtain reliable bulk solids handling. We offer a range of services in the area of bulk solids flow technology, including consulting, testing, engineering design, and equipment supply. Please call for additional information on these services.



400 Business Park Drive
Tyngsboro, MA 01879
Tel: (978) 649-3300
Fax: (978) 649-3399
e-mail: info@jenike.com
<http://jenike.com>