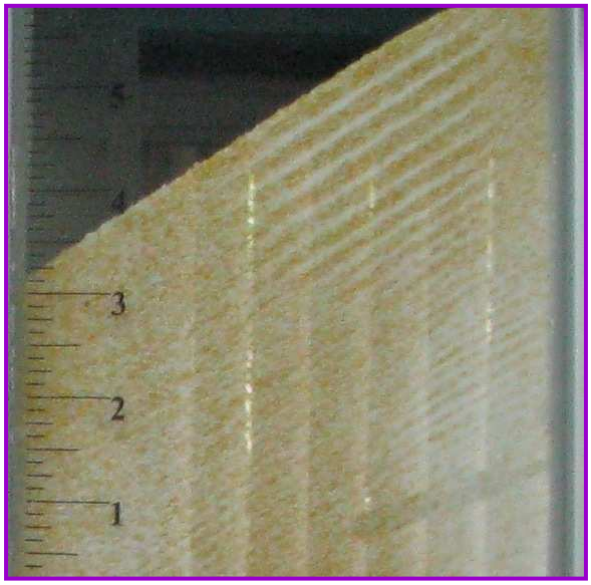
Solve Segregation Problems in Process Design

Material Flow Solutions, Inc.



Segregation occurs through several mechanisms. Identification of the primary segregation cause and the segregation pattern produced through handling is critical to ***prevent segregation*** (or de-mixing) of the final mixture during handling and packaging. Any property difference between materials can cause separation of critical material components. However, there are five common causes of segregation problems in typical handling systems:

- Sifting
- Angle of repose differences
- Air entrainment
- Impact
- Percolation

At Material Flow Solutions we have developed a novel segregation test device (the *SPECTester*) that uses spectral measurements to provide direct measurements of segregation tendencies. These measurements can identify the magnitude, cause and pattern of up to 6 components in complex mixtures as materials travel through processes. This can be coupled with measurements of moisture content, surface tensions, particle size, particle shape, bulk strength, repose angles, and particle roughness factors to relate segregation tendencies to particle scale properties. As a result we can predict segregation due to multiple mechanisms with complex mixtures of materials. The power of this approach allows us to optimize the segregation prevention – and we do it more quickly than with traditional sift-and-count methods. In as little as 20 minutes, the *SPECTester* reports the data of which primary (and secondary) segregation mechanism is present with your material in your process. This information is input into analysis software specifically developed to model segregation of powder, granular, and fine-cut fibrous products.

Knowing the segregation mechanism specific to your material, and how that material reacts within your specialized process parameters – we make custom recommendations for process modification to eliminate, or greatly reduce, segregation. Eliminating segregation puts an operating plant back on-line, eliminating costly waste.

PRACTICAL APPLICATIONS of ***segregation data*** include, but are not limited to:

- Maintaining product quality in processes
- Designing custom processes to meet specific product behavior parameters
- Achieving consumer acceptability
- Increasing the bottom line

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