

Segregation of Blended Materials

Why Blend ?

Achieving and maintaining a homogenous blend of different ingredients, is critical in many businesses. Getting the right mix of dried vegetables into the soup packet, the right balance of fruit and nut go into the breakfast cereal and exact dosages of active drug into the tablet are all essential to the success of the end product.

What is Segregation ?

Many blended materials however suffer easily from 'segregation' of the different constituents during movement. Finer ingredients migrate to the bottom and tend to settle while larger ingredients roll or bounce along on top. This can take place when a blended material is vibrated, for example during transport. It can also happen when material is 'poured' or drained out of storage or process due to 'regular'



How is segregation overcome ?

Several companies overcome segregation concerns by capturing the blend constituents within a granule but granulation is not possible or desirable in many cases. For breakfast cereals, some people prefer to pick the raisins out of the cereal. More and more pharmaceutical companies rely on direct compression of blended materials, where product uniformity is critical.

The answer lies in IBC blending followed by mass flow discharge.

IBC Blending & Mass Flow Discharge:

Blending within an IBC offers several advantages (see blending) but on the subject of segregation, the critical feature is that the batch IBC goes direct to the next stage of the process without the blend being disturbed. The next challenge is to discharge the IBC contents without allowing segregation to occur - this requires 'mass flow'. Mass flow means that all of the mass of a dry blend moves uniformly out of the container. In an automated system this is only possible with a properly designed gravity flow system.

The Matcon cone valve provides guaranteed mass flow and eliminates segregation at the point of discharge. The action of the valve is to repeatedly lift gently into the product, then lower and seal, allowing relatively small 'pulses' of product to be gravity fed to process below. As the material 'falls', all blended constituents discharge at the same rate and mass flow results.

Matcon 'in-bin-blending' followed by 'cone valve discharge' is the proven way to beat segregation.