Blender Performance

Material Flow Solutions, Inc.

Blender Type	Segregation Mechanism	Rank
Rotary Shell	Angle of repose	3
	Sifting	3
	Air entrainment	8
Plow/Paddle	Angle of repose	8
	Sifting	7
	Air entrainment	5
Tube	Angle of repose	5
	Sifting	5
	Air entrainment	7
Nauta®	Angle of repose	4
	Sifting	4
	Air entrainment	7
Ribbon	Angle of repose	4
	Sifting	4
	Air entrainment	8
Cone-in-Cone	Angle of repose	7
	Sifting	8
	Air entrainment	8

Blender Ranking for Segregation

Blender Performance. Blending of bulk materials is the process of bringing distinct particles into intimate contact in such a way as to produce a mixture with consistent quality at a prescribed scale of scrutiny. Conversely, segregation is a process that undoes blending by inducing separation of distinct particles via a prescribed mechanism. Each blender creates intimate contact of particles via a particular set of actions (formation of a pile, movement of a paddle, etc.). If material also segregates due to a particular blending action, then the specific blender causing the blending action is a poor choice for the material mixture in question. Thus, one can rank blender performance based on the type of segregation which may occur with the mixture. For example, sifting segregation is caused when fine particles of a given size pass through the inter-particle pore structure during shear or induced vibration.

Angle of repose segregation occurs when two materials demonstrate different frictional characteristics against the bulk material and air entrainment segregation occurs when the mixture impacts on a surface and air carried with the bulk material transports fines to other points in the process equipment.

It is obvious that the selection of an optimal blender depends on the type of segregation that occurs in the blender. If we consider only three segregation mechanisms and limit our analysis to general blender types we can produce a ranking of blender effectiveness based on segregation mechanism. The ranking in the table is the result of analysis where 1 is a poor blender and 10 is perfect blending. Clearly, measurement of key segregation tendencies is required to evaluate blender performance.

At Material Flow Solutions, Inc., we routinely evaluate bulk materials for segregation potential and provide blender evaluation and selection recommendations.

PRACTICAL APPLICATIONS of knowledge regarding proper ***Blender Performance*** include, but are not limited to:

- Blender selection
- Quality control of process
- Order of component addition
- Agglomerator evaluation

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