RECOMMENDED MIXING EQUIPMENT FOR

Starch Dispersions

APPLICATION SUMMARY:

Starches from corn, wheat, tapioca, potato and other sources are thickening and gelling agents added to various food products. Functionally modified starches are also used in adhesives, paper coatings, pharmaceuticals and other applications, often in combination with other hydrocolloids.

Dispersing powdered starch into liquid is a commonly encountered mixing challenge because of its tendency to float and form lumps (“fish eyes”) if not added or agitated properly. This bulletin describes a proven technology for preparing high-quality starch dispersions via sub-surface powder injection that is fast, convenient and dust-free.

Ross SLIM Technology

The Ross Solids/Liquid Injection Manifold (SLIM) Technology is well proven for bulk dispersion of starch powders and other kinds of thickeners. The SLIM features a unique rotor/stator mixer capable of drawing powders directly into a high shear zone without the use of eductors or pumps. Its mixing action inherently generates a powerful vacuum that motivates solids sub-surface for immediate dispersion into a liquid stream or a liquid batch.

In conventional mixing operations, starch dispersions are typically prepared by carefully adding powders through the top of the vessel as the liquid is being stirred by a propeller blade or paddle agitator. This procedure can take several hours when done in large tanks, with the operator constantly working the batch surface with a spatula to manually submerge the starch and wet it out. In comparison, the SLIM allows for fast sub-surface injection of powders while preventing lump formation and nuisance dusting. It combines the starch powders and the liquid at precisely the point where vigorous mixing takes place. Particle wet-out is virtually instantaneous so cycle times are very short and the thickened dispersion is not overworked.

The SLIM Technology is available in both batch and inline designs, making it simple to retrofit into most existing processes. It can induct powders into any low-viscosity liquid below ~10,000 centipoise. Much thicker formulations containing starch and other raw materials may be prepared in Multi-Shaft Mixers, Double Planetary Mixers and Planetary Dispersers depending on the viscosity profile and order of ingredient additions.
The Ross SLIM is proven technology for fast and efficient dispersion of many other solids including:

- Alginites
- Alumina
- Bentonite Clay
- Boric Acid
- Calcium Carbonate
- Carbon Black
- Carrageenan
- Citric Acid
- CMC
- Dye Powders
- Graphite
- Ground Rubber
- Guar Gum
- Gum Arabic
- Magnesium Hydroxide
- Milk Powder
- Pectin
- Rosin Ester Resin
- Sugar
- Talc
- Titanium dioxide
- Whey
- Xanthan Gum

**Processing advantages of the SLIM Technology**

- **Simple and straightforward operation.** Just turn on the mixer and start inducting powders. No eductors or pumps to deal with.
- **Shorter cycle times.** SLIM users switching from conventional mixers and stirrers report as much as 80% reduction in overall cycle time.
- **Increased yield and higher quality dispersions.** By preventing the formation agglomerates and eliminating floating powders, the SLIM maximizes both yield and functionality of raw materials.
- **Easier material handling.** The inline SLIM mixer is usually installed at floor level so operators need not climb up a mezzanine carrying heavy bags of powder. Solids can also be delivered via automatic feeding devices.
- **Cleaner and safer mixing.** A “hose & wand” attachment is used for dipping into bulk bags or containers to conveniently induct lightweight powders without creating a dusty environment.
- **Flexibility.** A portable SLIM unit can be used in multiple process lines and can serve mix vessels of various sizes.

For more information on the Ross SLIM Technology

Visit [www.highshearmixers.com](http://www.highshearmixers.com) or click here to download a brochure.