

## TECHNOLOGY BRIEF:

A common issue in dispersing pigments into liquid is dust generation. Charging solids into an open, top-agitated vessel inherently causes lightweight powders to become airborne. Using a high shear mixer equipped for sub-surface powder induction helps minimize dusting, maximize yield, improve dispersion quality and accelerate production.

# Dust-free mixing of pigments into liquid



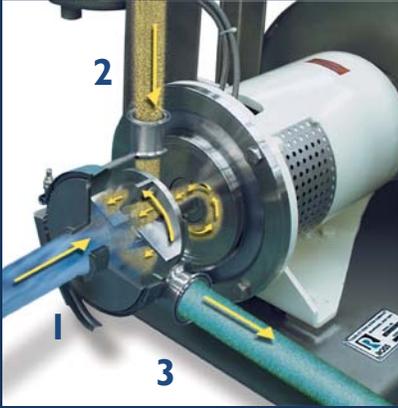
## Prevent dusting in the mixing room

When poured from one open vessel into another, many pigment powders easily become airborne, generating significant amounts of dust that can impact plant safety and require extensive clean up. Excessive loss of pigment due to dusting can also lead to off-spec batches that require additional raw material to achieve the right color intensity.

While dust collection systems can be employed in the mixing area to capture airborne particles, preventing their release is a better strategy. The key is to eliminate the dust-generating steps of transferring powders from their original container and dumping them into the liquid surface of a mix vessel.

## High speed powder induction

A mixing system equipped for sub-surface powder induction effectively prevents pigment powders from becoming airborne. The Solids/Liquid Injection Manifold (SLIM) available on Ross High Shear Mixers offers this functionality. The SLIM technology utilizes a ported rotor and stator specially designed to generate a powerful vacuum that draws powders into the mix chamber.



## How the SLIM technology works

The above illustration shows how an inline SLIM mixer works. The liquid stream (1) enters the mixer and immediately encounters the powder addition. Drawn into the mixer by a powerful vacuum, the powder (2) is injected through the ported rotor directly into the high shear zone. The resulting dispersion (3) is expelled centrifugally through the stator openings at high velocity.

For more information on the SLIM:

Click [here](#) to see a SLIM mixer in action.

Or visit the website :  
<http://www.highshearmixers.com/slim-models.html>



A Ross inline SLIM mixer connected to a 1,000-gallon vessel for recirculation.

Attaching a hose & wand device to the powder inlet of the SLIM allows the operator to simply draw powders straight from within the bulk container. This powder handling method generates virtually zero dusting and is very operator-friendly.



Powders may also be loaded into a hopper. As soon as the mixer reaches operating speed, the SLIM valve is opened to allow the flow of solids into the shear-intense region within the rotor/stator assembly. Dispersion is instantaneous.

High speed powder induction simplifies the overall mixing operation which in turn accelerates production and process changeover. It reduces dusting, floating powders, material losses and other associated issues of charging pigments on top of an agitated mix vessel.

## Sample Application: Cosmetic Pigment Dispersions

A manufacturer of cosmetic colors was using a saw-tooth disperser to mix iron oxide, titanium dioxide and other pigments into various oil- and water-based vehicles. The process was time-consuming due to material handling issues especially as operators tried to minimize dusting by slowly adding solids into the mixing vessel. In addition, the disperser was extremely slow to achieve the desired level of dispersion.



Simulation trials done at the Ross Test & Development Center confirmed that the SLIM can produce superior quality dispersions in minutes. The new system enabled the manufacturer to upgrade their mixing operation in terms of higher productivity, lesser clean-up and improved operator safety.

