

## APPLICATION SUMMARY:

Pigment dispersions are typically prepared in a two-step process: (1) powder wet-out in a batching tank and (2) one or more passes through a mill to achieve the desired fineness of grind.

The costly and time-consuming milling step is often a production bottleneck which in the past has forced manufacturers to add more milling equipment to handle multiple passes or simply keep up with volume demands.

Today, companies are looking at better ways to prepare the pre-mix and disperse agglomerates as close as possible to the desired specifications to reduce the number of mill passes, allow the use of smaller grinding media, or even eliminate milling altogether.

## RECOMMENDED MIXING EQUIPMENT FOR Pigment Dispersions



### Ross High Speed Dispersers and Ultra-High Shear Mixers

Ross High Speed Dispersers are standard processing equipment used throughout the paint, ink, chemical, plastic and adhesive industries. One of the most common applications of this basic mixing device is the wetting out of pigments (pre-mix preparation). Turning at tip speeds up to around 5,000 fpm, the saw-tooth blade of the High Speed Disperser produces a deep vortex on the liquid surface into which dry powder ingredients are added. At this stage, large and loose agglomerates are generally disintegrated by the High Speed Disperser. The resulting pre-mix is then fed to downstream milling equipment for the polishing step.

For pigment dispersions that demand very long milling times, manufacturers can improve overall production by upgrading the pre-mix step and without costly modifications to the milling operation. One such solution is the patented Ross PreMax Ultra-High Shear Mixer, a batch rotor/stator device capable of wetting pigments while accomplishing some level of grinding and fine deagglomeration. The Delta generator of the PreMax produces a double vortex – it draws product components from above and below the rotor – enabling very fast powder incorporation and product turnover at ultra-high shear conditions.

The PreMax is proven to generate higher levels of dispersion than any other batch-style mixer including saw-tooth dispersers or dissolvers, traditional rotor/stators and immersion mills. In addition, mixing results in a PreMax are usually comparable to one or two passes through a media mill. This reduces the number of mill passes required to achieve the target particle size distribution, and in some applications, eliminates milling entirely.

A few applications of  
Ross High Speed Dispersers and  
PreMax Ultra-High Shear Mixers

- Automotive Coatings
- Conductive Inks
- Cosmetics
- Dye Stuffs
- Electronic Pastes
- Filled Polyester Resins
- Foods
- Glass Coatings
- Graphite Composites
- High Performance Ceramics
- Magnetic Dispersions
- Paints
- Personal Care Products
- Pharmaceuticals
- Plastisols
- Polyurethanes
- Reinforced Epoxies
- Specialty Adhesives

For more information  
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click [here](#) to download a  
brochure.



High Speed Dispenser



PreMax Ultra-High Shear Mixer

Some Advantages of the Ross PreMax Ultra-High Shear Mixer

- **Wide viscosity range.** Unlike conventional rotor/stator mixers which are limited to viscosities below  $\sim 10,000$  cP, the Delta generator (US Patent No. 6,000,840) of the PreMax easily handles viscous dispersions in the range of 50,000 cP. It can also be used in a multi-shaft mixing system for batching higher viscosity materials.
- **Shorter cycle times.** PreMax users who were able to eliminate milling altogether reduced their overall production time from an all-day 6-8 hours to less than 1 hour in a single tank and without the extensive clean-up of the media mill, pumps and piping. Moreover, in side-by-side tests which looked at particle size distribution in both low and high viscosity products, mixing times in the PreMax were over six times faster than in regular batch high shear mixers.
- **Safer mixing.** The PreMax can be equipped with the Ross Solids/ Liquid Injection Manifold (SLIM) Technology for sub-surface powder induction. When dealing with low bulk density pigments, the operator can dip a “hose & wand” attachment into the bulk bag or container and conveniently induct lightweight powders without creating a dusty environment.



Delta Rotor/Stator



PreMax with SLIM Technology

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