APPLICATION SUMMARY:

Multi-Shaft Mixers capable of bulk agitation, high-speed powder wet-out and efficient heat transfer are ideal equipment for floor coatings based on epoxy, urethane, acrylic or hybrid chemistries.

Several configurations of Multi-Shaft Mixers are available, varying in agitator design, mixing intensity, vacuum capability, portability, and other characteristics. In selecting the appropriate mixer features that will best serve a particular formulation, one must take into account the coating’s viscosity profile during processing, shear requirement and most practical method of ingredient addition.

RECOMMENDED MIXING EQUIPMENT FOR Floor Coatings

Ross Multi-Shaft Mixers

Ross Multi-Shaft Mixers are widely used in the preparation of resin-based floor coatings. Equipped with two or more independently-driven agitators working in tandem, Multi-Shaft Mixers deliver a robust combination of high shear agitation and laminar bulk flow within a wide viscosity range: from water-like consistency to several hundred thousand centipoise.

The most economical design is the Dual-Shaft Mixer which features an anchor agitator and a high speed disperser. Turning at tip speeds around 5,000 ft/min, the saw-tooth disperser blade creates a vigorous vortex that quickly incorporates dry ingredients into liquid. One sample application is the dissolution of polymer beads and waxes into low-viscosity methyl methacrylate monomer. The sweeping action of the low-speed anchor agitator enhances the exchange of materials within the vessel, continuously “feeding” the disperser blade with fresh product.

Mixing is often accompanied with simultaneous heating to accelerate dissolution. Due to its high speed, the disperser also imparts heat to the batch so actual temperature must be carefully monitored. Scrapers attached to the anchor help to remove any partially dissolved solids that may want to stick to the sidewalls and also promote uniform batch temperature by improving heat transfer across the mix can jacket throughout the dissolution stage as well as the subsequent cool down step.

For added versatility and shear capability, a rotor/stator assembly may be supplied in addition to the disperser blade and anchor agitator. This Triple-Shaft Mixer design is ideal for formulations containing fine fillers which require more intense mixing for proper dispersion. A sample application is dispersing silica powders into a urethane resin. A rotor/stator mixer capable of sub-surface injection promotes rapid wet-out, prevents floating powders and minimizes dusting. Vacuum may be applied to achieve a smooth finished product with no air bubbles.
Advantages of Ross Multi-Shaft Mixers

- **Versatility.** Equipped with independently-controlled drives, the agitators in a Multi-Shaft Mixer can be engaged in any combination and at any speed for any interval during the mixing cycle. The combined mixing and heat transfer capabilities of each agitator results in a very robust system that can handle a wide range of viscosities.

- **Protection against contamination.** The Multi-Shaft Mixer is a closed system with no bearings or agitator seals submerged in the mixing area. Self-adjusting scrapers and flush discharge valves eliminate dead zones where product can stagnate.

- **Cleanability.** With change-can design Multi-Shaft Mixers, the agitators are raised and lowered by a hydraulic lift allowing easy access for cleaning between batches. CIP rotary spray nozzles may also be supplied.

- **Scalability.** Standard and sanitary models from 1 to 3000 gallons working capacity are available in both vacuum and atmospheric designs.

- Customers can rely on Ross for customizations and auxiliary equipment including custom sight/charge ports, interchangeable blades and mix vessels, sub-surface powder injection capability (SLIM Technology), heating units, vacuum pumps and PLC Recipe Controls.

Other Applications of Ross Multi-Shaft Mixers

- Battery Slurries
- Beverages
- Candy
- Creams and Lotions
- Detergents
- Dietary Supplements
- Filled Epoxies
- Greases and Lubricants
- Gum Dispersions
- Hot-Melt Adhesives
- Inks
- Medical Gels
- Metal Slurries
- Ointments
- Plastisols
- Polishing Compounds
- Rubber Solutions
- Sauces
- Sealants
- Solder Pastes
- Syrups
- Toothpaste
- Transdermal Patches
- Wax Emulsions

*For more information on Ross Multi-Shaft Mixers*

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