

APPLICATION SUMMARY:

In the production of ready-to-drink supplements and liquid vitamins filled into capsules, proper mixing is one of the most critical steps in achieving lot-to-lot consistency and efficacy. The mixing process directly impacts end product characteristics like taste, mouthfeel, appearance, viscosity, purity, and stability.

This bulletin describes the benefits of preparing liquid supplements in a Multi-Shaft Mixer designed for bulk agitation, high-speed solids dispersion and superior heat transfer.

RECOMMENDED MIXING EQUIPMENT FOR Liquid Supplements



Ross Multi-Shaft Mixers

Sanitary Ross Multi-Shaft Mixers are widely used in the preparation of liquid supplements, vitamins and minerals. 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 flow pattern that quickly wets out dry ingredients as they are added to the batch. On the other hand, the sweeping action of the low-speed anchor agitator further enhances the exchange of materials within the vessel, essentially “feeding” the disperser blade with fresh product. Scrapers attached to the anchor also help promote a uniform batch temperature by improving heat transfer across the jacketed sidewalls and bottom of the mix can. Vacuum may be applied during mixing to achieve a smooth, clear and air-free product.

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 particularly ideal for generating fine emulsions and obtaining a very tight particle size distribution. Hard-to-disperse powdered ingredients such as gums and thickeners also benefit from the high shear mixing action of the rotor/stator, especially when added via sub-surface injection (Ross SLIM Technology). A very uniform, lump-free consistency is achieved in just a few turnovers so that viscosity loss due to over-mixing is easily avoided. In addition to the short cycle time, issues like floating powders, foaming and excessive dusting are also eliminated.

Other Sanitary Applications of Ross Multi-Shaft Mixers

- Beverages
- Candy
- Chocolate
- Condiments
- Flavorings
- Food Sauces
- Gum Dispersions
- Hummus
- Hydrocolloid Suspensions
- Medical Gels
- Ointments
- Pastry Fillings
- Peanut Butter
- Pharmaceutical Creams
- Salad Dressings
- Suspensions
- Syrups
- Toothpaste
- Transdermal Patches

**For more information
on Ross Multi-Shaft Mixers**

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



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, powder injection capability (SLIM Technology), heating units, vacuum pumps, and controls ranging from simple Variable Frequency Drives and Operator Stations to more sophisticated PLC Recipe Systems.

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