Advanced Mixing Technologies
800-466-2369
www.admix.com

Admix Processing Report

INDUSTRY: Food Processing
APPLICATION: Mayonnaise Pre-mix
REPORT #: APR-FP-101
Revision: 9-1-00

References available upon request

OBJECTIVE

Prepare a stable oil-in-water emulsion using egg yolk or whole egg as the emulsifying agent, and vinegar as an acidifying ingredient or preservative. Highest possible viscosity insures a long shelf life.

TYPICAL INGREDIENTS

- ✓ Whole Egg or Egg Yolk
- ✓ Vegetable or Soy Bean Oil
- ✓ Vinegar
- ✓ Sugar
- ✓ Salt
- ✓ Modified Food Starch
- ✓ Lemon Juice
- ✓ Potassium Sorbate
- ✓ Calcium Disodium EDTA
- ✓ Xanthan Gum
- ✓ Natural & Artificial Flavors
- ✓ Beta Carotene

GUIDELINES

- ✓ Tip speeds of at least 50 ft/sec
- ✓ Intensity in water of at least 25
- ✓ Intensity at 5000 cps of 10 (minimum)
- ✓ Minimum turnover rate of 5 turns/minute
- ✓ Typical mix time = 15 minutes

In preparing a typical batch of mayonnaise pre-mix, egg is added to the appropriate water and vinegar volume while maintaining the proper temperature. After a smooth mixture is obtained, spices or gums are added, and oil is slowly added with high shear mixing until the emulsion begins to build. This starter batch is typically 1/4 to 1/2 of the design batch. Once emulsion begins, the oil can be rapidly introduced along with the balance of vinegar and water. A uniform pre-mix should be obtained after 10-15 minutes, with final viscosity in the 5,000 to 25,000 cps range depending upon the formulation. A mayo pre-mix can also be done continuously with our specially designed sump tank, which provides for a 10-15 gallon "seed" batch (similar to above, but a much smaller volume). Once the emulsion is formed, a continuous flow of up to 65 gpm is possible.

TESTING AND CAUTIONS

The mayo pre-mix is typically pumped through a colloid mill to develop the final consistency, viscosity and stability desired. A drop in final viscosity of the finished mayonnaise after aging could be caused by a poor pre-mix, or from insufficient milling. It is critical not to break the emulsion once formed, and a viscosity of 200,000 cps of the final blend is typical. Consistency of temperature, mix time and intensity is important to insure uniformity of batches.

ADMIX EQUIPMENT

Rotosolver® - for high shear emulsification of the seed batch (with or without Admix sump tank)
DynaShear™ - for in-line high shear with recirculation for continuous flow processing
Admixer™ - static mixers for in-line preblending of oil and vinegar prior to introduction to the seed batch

234 Abby Road
Manchester, NH 03103

Tel: 603-627-2340
Fax: 603-627-2019