Solutions for Your TOUGHEST MIXING Applications in

FOOD

Production of Margarine and Low Fat Spreads

SILVERSON

THE FIRST NAME IN HIGH SHEAR MIXERS

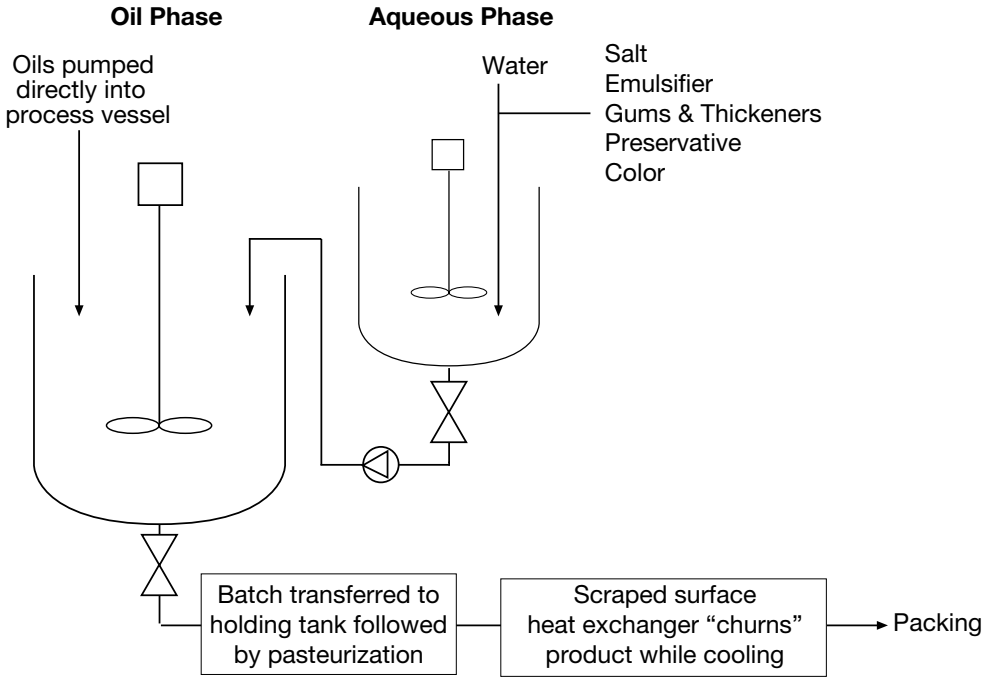
Production of Margarine and Low Fat Spreads

Margarine is a blend of around 80% vegetable oil or animal fat and 20% water with added salt, flavorings, color and preservatives. In many countries these proportions are controlled by legislation. Low fat spreads have similar ingredients, however the oil content can be as low as 20%. Gums and thickeners such as gelatin, alginates and most commonly, caseinates are used to replace the viscosity and bulking effect of the fat and to ensure that a stable water-in-oil emulsion is formed.

Blends of margarine/low fat spread and buttermilk, or other dairy ingredients e.g. milk powder and whey powder are increasingly common. These combine the taste of butter with low fat content and “spreadability” from the refrigerator.

The Process

Manufacturing process varies according to ingredients used and product formula, however, a typical process can be summarized as follows:



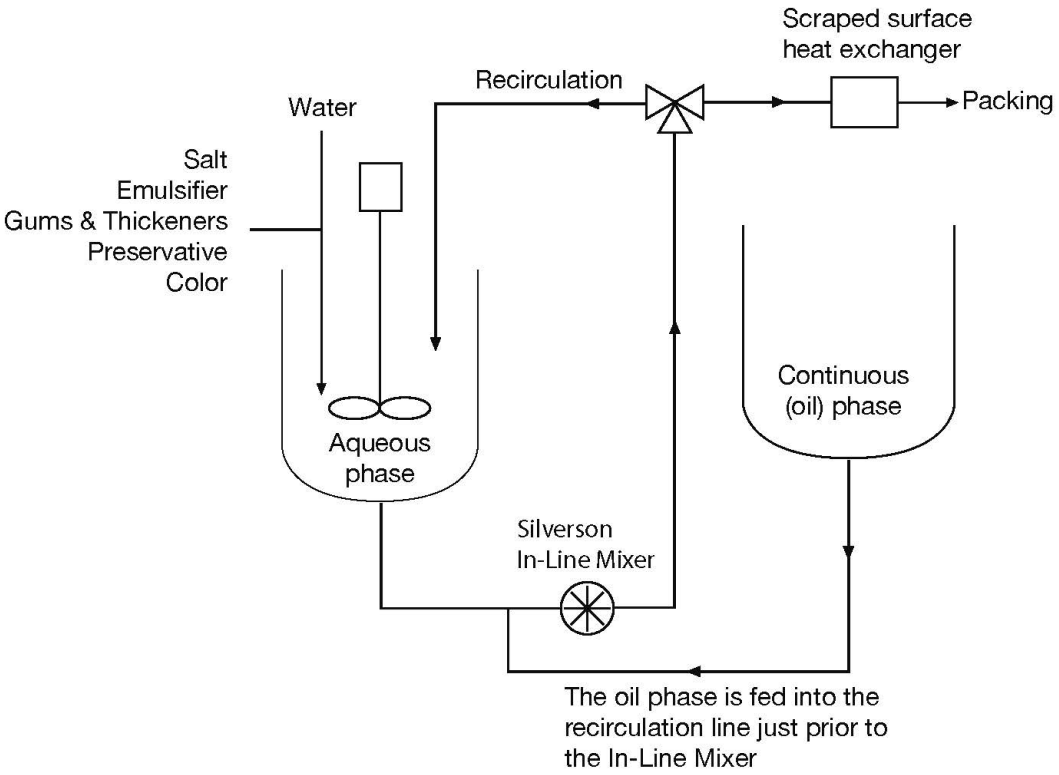
The Problem

Using conventional mixers and agitators several difficulties can arise:

- Additives designed to thicken the product tend to form agglomerates which agitators cannot easily break down.
- Long processing times are often required to complete hydration.
- Poor hydration may lead to unsatisfactory “mouthfeel” and an unstable product leading to storage problems once the product has been opened.

The Solution

A Silverson High Shear mixer is able to overcome all of these difficulties. This is typically achieved using an In-Line mixer operating in conjunction with an in-tank agitator as follows:



The aqueous phase ingredients are added to the vessel and recirculated through the self-pumping In-Line mixer which disperses and hydrates the materials, rapidly producing a homogeneous agglomerate-free mix.

The oil can be fed into the line just prior to the In-Line mixer so the two phases mix on contact in the high shear zone, ensuring a uniform, stable emulsion is achieved after a short recirculation period. This is then fed through to the scraped surface heat exchanger.

Processing with an In-Line mixer prior to churning can also improve “mouthfeel,” especially in ultra low fat spreads.

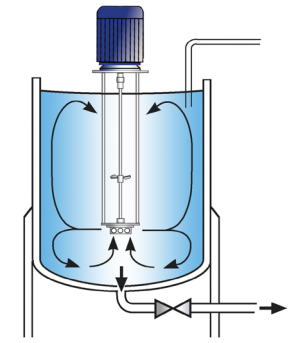
The Advantages

- Premixing of powdered ingredients is not necessary.
- Agglomerate-free mix.
- Rapid mixing times.
- Improved pre-emulsion.
- Maximized yield of raw materials as thickening agents are fully hydrated and other ingredients are completely dispersed.

The batch size, formulation, type of ingredients and the viscosity of the end product dictates which machine from the Silverson range is suited to individual processing requirements.

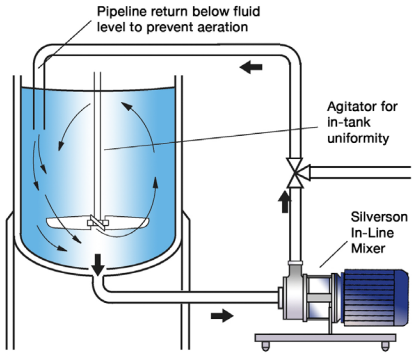
High Shear Batch Mixers

- Suitable for small batches
- Batch mixers can be vessel mounted or fitted to a mobile hydraulic floor stand
- Can easily be moved from vessel to vessel
- Easily cleaned
- Small units available for R&D and pilot plant



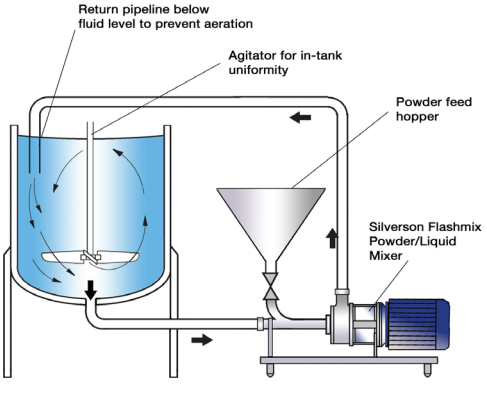
High Shear In-Line Mixers

- Ideal for larger batches
- Aeration free
- Easily retrofitted to existing plant
- Self-pumping
- Can be used to discharge vessel
- Designed to be Cleaned-In-Place
- High Viscosity models available



Silverson Flashmix

- Suitable for batches with large volumes of powders
- Minimized aeration
- Minimized cleaning requirements
- Suitable for higher viscosity mixes
- Suitable for operation at higher temperatures
- Minimum operator input required



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Issue No. 29FA4