

Solutions for Your TOUGHEST
MIXING Applications in

FOOD

Introduction

Production of Cream

The Process

Liqueurs

The Problem

The Solution

The Advantages



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Production of Cream Liqueurs

Cream liqueurs are an emulsion of cream with an alcoholic spirit such as brandy, whisky, vodka, etc. which may be in highly concentrated form.

Most products contain several other added ingredients which may include sugar, full fat milk powder, non-fat milk solids, sugar, flavorings, coloring, preservatives and a thickening agent such as sodium caseinate, which also acts as a stabilizer to prevent the cream and alcohol from separating.

The Process

The basic manufacturing process consists of three stages:

- Dispersion of powdered ingredients into either the alcohol, cream or aqueous phase as appropriate
- Premixing of the phases to form a pre-emulsion
- Homogenization, normally using a high pressure homogenizer to obtain a stable emulsion which will not separate in the bottle

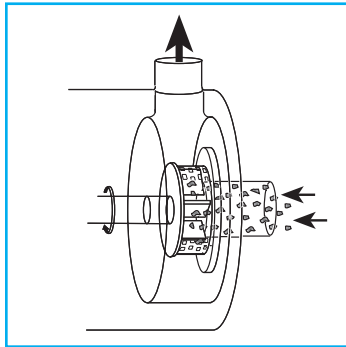
The Problem

A number of problems can be encountered when using conventional agitators:

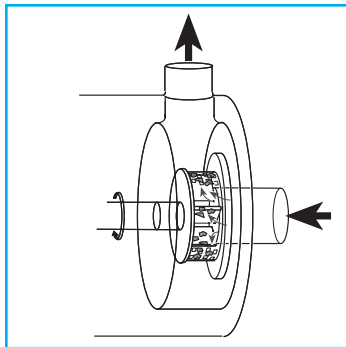
- Long mixing times are required to completely wet out, disperse and/or dissolve the ingredients.
- Powders such as caseinate and milk powder are very cohesive and have a tendency to form agglomerates which agitators cannot easily break down.
- Caseinates are difficult to dissolve and will rapidly increase in viscosity, especially if added directly to the cream.
- Agitators do not impart enough shear to form the stable pre-emulsion of low globule size required by the high pressure homogenizer.
- Several runs through the high pressure homogenizer may be required to obtain the required product.
- Many ingredients are heat sensitive.
- Loss of alcohol through evaporation must be avoided.

The Solution

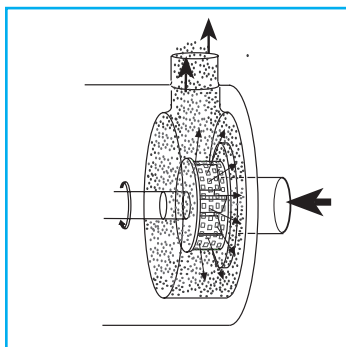
These problems can be overcome by adding a Silverson In-Line mixer to the existing process. Batch mixers and the Flashblend powder/liquid mixing system are also used for this application (see overleaf). Operation is as follows:



The high speed rotation of the rotor blades creates a powerful suction which draws the liquid and powdered ingredients into the workhead.



The materials are subjected to intense shear in the confined area of the workhead. Agglomerates are broken down in the gap between the rotor blades and stator wall. A lump-free mixture is rapidly obtained.

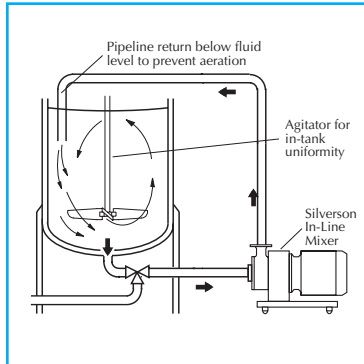


The product is forced out of the stator and returned to the process vessel by the self-pumping action of the In-Line mixer as fresh material is simultaneously drawn into the workhead. Globule size is progressively reduced, producing a uniform premix for the high pressure homogenizer.

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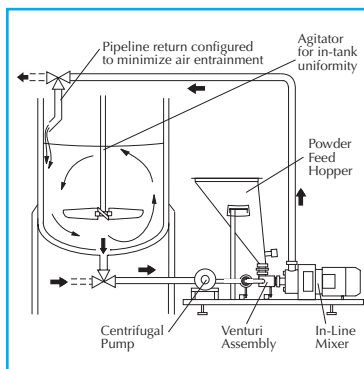
The Advantages

- Agglomerate free mix
- Rapid Mixing times
- Stable pre-emulsion and a more stable end product
- The pre-emulsion is more uniform and of a low particle size, allowing faster processing through the high pressure homogenizer



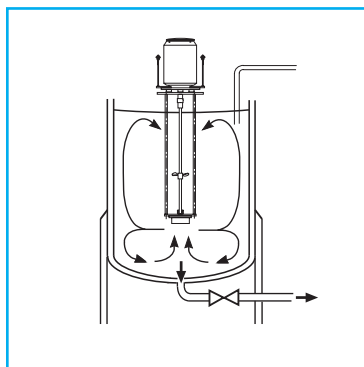
High Shear In-Line Mixers

- Ideal for larger batches
- Must be used in conjunction with an efficient in-tank agitator to wet out powder as illustrated
- Aeration free
- Easily retro fitted to existing plant
- Self pumping
- Ultra Hygienic models available



Silverson Flashblend

- Ideal for larger batches
- Capable of rapidly incorporating large volumes of powders
- Minimized aeration
- Minimized cleaning requirements
- Controlled powder addition rate
- Minimum operator input
- Dust extraction systems available
- Ultra Hygienic models available



High Shear Batch Mixers

- Suitable for batches of up to 300 gallons
- Can be used on mobile floor stands
- Can easily be moved from vessel to vessel



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