



Applications for High Shear Mixers
Dispersion of Locust Bean Gum



Applications for Locust Bean Gum

Locust bean gum is extracted from the beans of a carob tree and is processed as a fine white powder. The gum is primarily used in the food industry for its gelling and thickening properties. It is commonly used in ice cream for its ability to suppress the formation of ice crystals, improving the product's mouthfeel, and is also found in yogurts, fruit juices, cream cheese, and baby foods.

Locust bean gum has different grades that each vary the final product's viscosity, clarity, and particle sizes. Other hydrocolloids, such as xanthan and agar gums [see coramix.com/learn for more on xanthan and agar gums], may be mixed with the locust bean gum to increase its gelling and thickening effects.

Mixing Process

The standard mixing process using traditional agitators is as follows:

- The locust bean gum may be premixed with other gums and/or powdered dispersion agents to assist with dispersion.
- The agitator is started and the gum is gradually added so as to avoid the formation of agglomerates.
- Mixing continues until the gum is fully hydrated.
- A filter stage may be necessary depending on leftover agglomerates.

Mixing Issues

Dispersion using traditional agitators carries a variety of issues:

- Low-shear agitators struggle to deagglomerate the powder as viscosity increases, especially at higher concentrations, increasing mixing times.
- Unnecessarily high concentrations of gum may be used to compensate for poor dispersion, decreasing yields.
- Complete hydration and dispersion take a considerable amount of time.
- Pre-mixing to aid with dispersion adds preparation time and material costs.
- Vigorous mixing for long periods of time may lead to aeration problems.
- Incorrect dispersion may lead to postponed hydration of the gum in storage, resulting in undesirable viscosity changes.

Our Solution

Dispersion: Instead of slowly stirring the mixture until it is homogeneous, Coramix mixers use high-shear and mechanical design to disperse the locust bean powder, greatly reducing each batch's cycle time while eliminating any agglomerates.

Phase 1: The Coramix inline mixer is connected with the eductor assembly, as well as pipes from the tank outlet to the mixer inlet and from the mixer outlet to the top of the tank. Base fluid is added to the tank, and the mixer is started to recirculate the fluid.

Phase 2: The powder feed valve is opened, and the gum is added directly into the hopper. The inline mixer pulls in the powder and deagglomerates the gum as it passes through the high shear mixing zone.

Phase 3: After all of the gum is added, the valve is shut and mixing continues while additional ingredients are added.

Advantages

Coramix high-shear mixers offer a solution to issues associated with traditional agitators:

- Rapid mixing speeds drastically reduce dispersion and hydration times, as well as mitigate aeration issues.
- Agglomerate-free mix, including at higher concentrations.
- Increased yield, reducing raw material costs.
- Smaller particle sizes result in a completely hydrated and stable solution, increasing shelf life.
- Rapid powder incorporation eliminates operator error.
- Increased consistency and repeatability between batches.
- No premixing required, saving on preparation times and costs.



Contact: For more information on Coramix products go to Coramix.com, or contact our sales team at Sales@Coramix.com for help in configuring a mixer to fit your needs.