

Case study:

Batch mixing of Gelatine

Application :

Gelatine is a practically pure protein (85%) and for this reason, of great importance in the human nutrition. Gelatine is obtained by means of hydrolysis of collagen which is the main protein constituent of the skin and bones of animals. Its neutral flavour, easy digestibility, brightness and reversibility makes Gelatine the preferred product for many different applications in Food, Pharmaceutical and Technical applications.

The production of gelatine can be divided in:

- Extraction of the Gelatine from bones or skin.
- Drying of the extracted Gelatine in a (Kathabar) drying tunnel
- Grinding and sieving of the dried Gelatine in a grinder (Hosokawa Alpine)
- Mixing and packing.

Gelatine is a natural product which is produced in a complex production process which can result in variations in structure and composition of the final product. To guarantee a constant end product a mixing step is included in almost every gelatine production line. Typical batch sizes for this application are 10.000 to 60.000 litres.

Mixing different grades and types of gelatine for Pharma and Food application including Halal quality.

- The requested mixing capacity : 21.000 ltr. / 15.000 Kg
- Flexible mixing process : 1.500 / 15.000 Kg
- Mixing time : 30 minutes
- Temperature rise during mixing : below 3° C .
- Mixing accuracy : ± 3 % variation in minor components

Additional requirements:

- No segregation during discharge into the packing machine.
- No product degradation (burning product) due to bearings and seals in product contact.
- Complete discharge, with efficiency of more than 99.999 %



Solution:

The selected mixer type is a Vrieco-Nauta® mixer type 210 VS-7 in food production execution with an effective working volume of 21.0000 litres. Vessel and cover manufactured in one single piece without segments or sharp edges (to avoid product hold up). The mixer is executed in cantilevered execution without bottom bearing. Central bottom outlet for easy and complete discharge. Mixing screw speed is set at 70 rpm. and orbit arm speed is set at 0.5 rpm. Process duration for the above process for a 15.000 kg batch can be less than 30 minutes.

Cleaning:

Flexibility of process "frequent changes of different grades" makes the cleanability of the blender is vital importance. Special design features like single piece vessel with semi domed cover, central bottom outlet and full E-polish of the mixer internals reduces the remaining product to a minimum. Remaining product dust inside the vessel is cleaned by an integrated pressure pulse gas cleaning system combined with dust extraction.

Conclusion:

The Vrieco-Nauta® Conical Agitated Blender is a **proven** technology for mixing of food and pharmaceuticals resulting in uniform and perfect homogenous products. The gentle mixing characteristics of this mixer in combination with possibility for increased batch sizes and cantilevered execution makes the Vrieco-Nauta® mixer the most suitable for mixing large batches of sensitive products such as Gelatine, Pectin, Alginates CMC and Carrageen and Sugar

