

# dioxide

## PACIFIC



# Powder Mixer

# Fristam Powder Mixer

The Fristam Powder Mixer is an extension of the shear pump which is designed to dissolve or emulsify and homogenise wet and dry ingredients into fluids.

The Powder Mixer is a stainless steel skid consisting of a base frame and table which includes a powder hopper which is also a funnel. A self-priming centrifugal pump (Fristam FZ pump) pumps liquid past the base of the funnel, creating a vacuum which sucks in powder. The powder/liquid mixture is then homogenized using the Fristam shear pump.

The Powder Mixer can achieve perfect homogenization of the product, allowing for quick batches and removal of additional mixing or processing.

This powder mixer dissolves:

- stabilisers in the fermentation of milk products such as gelatine in cream, pectin in cream cheese
- milk powder for the production of milk mixed beverage, ice cream, fruit milk
- concentrates of milk protein or oils/fats for increasing the protein and/or fat contents of milk for cheese production
- starch, salt and sugar, aspartame and other sugar substitutes
- flavours and citric acid
- protein powder (spray dried) for the production of bakery products
- wheat/rye flour or wheat meal for sourdough for producing breakfast cereals and ready to bake mixes
- pectin, CMC, Carbopol, gum Arabic and other thickener powders such as locust bean gum and guar gum or xanthan gum
- minerals such as lime, bentonite, CMC, barite etc. for the production of drilling fluids as auxiliary substances in petroleum and gas exploration

## SYSTEM IDENT CODE SELECTION

The Powder Mixer is available with many different options to suit your application.

Use the data sheet on page 4 to select the Powder Mixer (PM) ident code.

Then go to page 5 and 6 to complete the questionnaire for your application.

Once the code is selected and the questionnaire completed, we can quickly provide a quotation. If you need assistance, please contact us.



## Features and Benefits

FEATURE	BENEFIT	WHAT THIS MEANS FOR YOU
High Shear mixing	The intermeshed teeth of the rotor/stator and high rotor tip speed of the FSP Shear Pump ensure complete blending of the product	Consistent, lump-free mixing
Powders can be wetted and dispersed on the first pass through the Powder Mixer	Dramatically reduces processing time compared to other systems e.g. mixing in a batch tank or pumping through a screen. In most cases, there is no need for further processing after the powder mixer	Lower processing costs
Produces consistent batches	The product is forced through the Shear Pump teeth at a controlled concentration to ensure a complete and consistent mix.	Elimination of wastage
Processes larger batches	As the Fristam Powder Mixer is an inline system, the batch size is effectively unlimited	Flexibility in production
Is fully customizable: sizes, configurations, and options	Can be tailored to exact process requirements. FSP Shear Pump stator/rotor combinations are available to suit special applications	A cost effective system
System can be automated	Remote operation possible	Reduced manpower costs and O,H&S improvements
Cleans in place (CIP)	No undissolved powder sticking to pipe walls means that CIP is thorough and effective	Saves powder and ensures product quality
FSP Shear Pump is an adaptation of the standard Fristam FP Centrifugal. The FZ pump, (which provides the suction,) is a standard Fristam Liquid Ring Pump	Interchangeability of parts with standard pumps. Just the mechanical seal as a wear part. No specialised maintenance knowledge required	Spare Parts readily available. Reduced inventory. No specialised service personnel required

# Powder Mixer Ident Code Selection

<b>PM</b>	Dioxide Pacific Powder Mixer										
	<b>Voltage (three phase)</b>										
<b>1</b>	380V										
<b>2</b>	400-415V										
<b>3</b>	480V										
	<b>Frequency</b>										
<b>0</b>	50Hz										
<b>1</b>	60Hz										
	<b>Control Panel</b>										
<b>C0</b>	Not included										
<b>C1</b>	304 s/s enclosure, on/off control of pumps. Manual VSD speed adjustment for shear pump										
<b>C2</b>	304 s/s enclosure, PLC, HMI with up to 40 recipes (valve positions)										
<b>C3</b>	C2 + 4G router with remote internet access										
	<b>Vacuum Adjustment Valve (Water Flow)</b>										
<b>0</b>	Manual (standard)										
<b>1</b>	With electropneumatic positioner (use with C2/C3)										
	<b>Powder Flow Adjustment Valve (Base of Cone)</b>										
<b>0</b>	Manual (standard)										
<b>1</b>	With electropneumatic positioner (use with C2/C3)										
	<b>Vacuum Transmitter</b>										
<b>0</b>	Not Included										
<b>1</b>	Included – Display on HMI with low alarm										
	<b>Powder Transfer</b>										
<b>0</b>	Manual lifting of bags onto Powder Mixer table (standard)										
<b>1</b>	Vacuum bag lifter (up to 25 kg bags)										
<b>2</b>	Bulk bag unloading and transfer (for 500kg or 1000kg bulk bags)										
<b>3</b>	2 + Loss of weight system for tracking powder weight										
	<b>Dust Collector</b>										
<b>0</b>	Not Included										
<b>1</b>	Included										
	<b>CIP System</b>										
<b>0</b>	Not Included										
<b>1</b>	Water flush after powder – use with C2/C3										
<b>2</b>	Water flush and chemical clean – use with C2/C3										
	<b>Mixing Tank</b>										
<b>0</b>	Not included										
<b>1</b>	Included in 316 s/s - (state volume in L) with spray ball										
<b>2</b>	1 + actuated drain valve and outlet valve										
	<b>Product Supply Pump (outlet of Mixing Tank)</b>										
<b>0</b>	Not Included										
<b>1</b>	Included – advise flow (m3/hr) and pressure (bar)										
<b>2</b>	1 + VSD flow adjustment										
<b>PM</b>	<b>1</b>	<b>0</b>	<b>C1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>

# Questionnaire on the use of the Powder Mixer

Company: \_\_\_\_\_ Contact: : \_\_\_\_\_

Name: \_\_\_\_\_ Dept/Position: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: \_\_\_\_\_

\_\_\_\_\_ Fax.: \_\_\_\_\_

\_\_\_\_\_ Email: \_\_\_\_\_

## Final product:

Description \_\_\_\_\_ max. system pressure, p: \_\_\_\_\_ bar

Total quantity, m, V: \_\_\_\_\_ Batch process time: \_\_\_\_\_ min

kg  l

Flow rate / h, Q: \_\_\_\_\_ m<sup>3</sup>/h

Does the end product tend to foam?

Normal process temperature T: \_\_\_\_\_ °C

no  yes:  much  a little

max. permissible temperature, T<sub>max.</sub>: \_\_\_\_\_ °C

Density, ρ: \_\_\_\_\_ kg/m<sup>3</sup>

max. viscosity, η: \_\_\_\_\_ mPas (= cP) at \_\_\_\_\_ °C

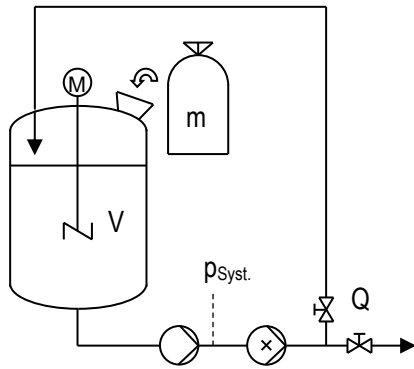
Flow properties / Product similar to: ... \_\_\_\_\_

**Please provide a basic sketch of your current process; your process requirements:**

## Which of the following examples comes closest to your requirements?

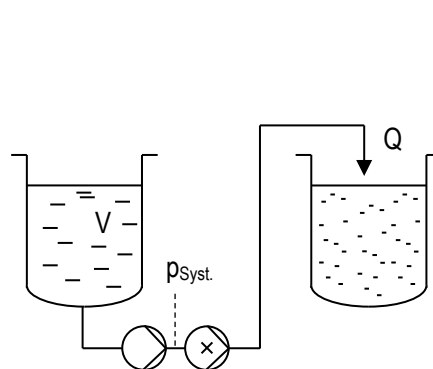
### Process 1:

Pass-through or repeated circulation, addition of solids into the holding tank



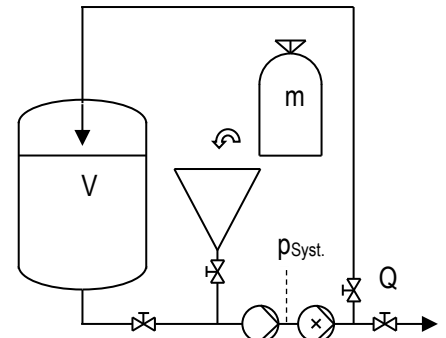
### Process 2:

Homogenization of a mixture out of a holding tank



### Process 3:

Powder mixer, pass-through or repeated circulation, inline addition of solids via hopper



Material data	Description	Volumes $V / m$ (ltr. / kg)	Temperature $T$ (°C)	Density $\rho$ (kg/m <sup>3</sup> )	Viscosity $\eta$ (mPas)
Base medium					
Additive 1					
Additive 2					
Additive 3					
Additive 4					
Additive 5					
Additive 6					

### Connection type:

Milk pipe DIN 11851  Tri-clamp  RJT  SMS  Flange  other:



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