

## PFB - Fluidized Zone Mixer

### Introduction:



The PerMix PFB series Twin-shaft Paddle Mixer is a fast mixer with high efficiency, which can also be known as Fluidizing Mixer, Fluidized Zone Mixer, Non-gravity Mixer or Zero-gravity Mixer.

The PFB Twin-shaft Paddle Mixer is applied to prepare a homogeneous mixture despite of particle size, shape and density. When the small amount of powder additives or liquid is required to be added into the bulk material, PFB Twin-shaft Paddle Mixers are able to achieve fast and precision mixing with high capacity.

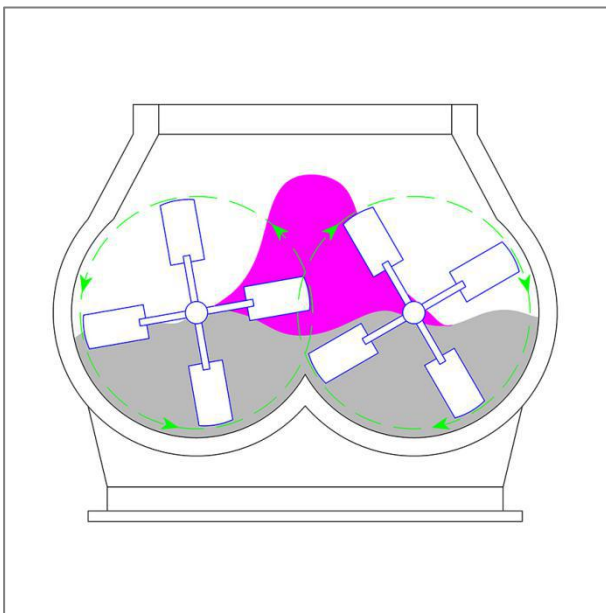
Due to its high efficiency and reliable performance, PerMix Twin-shaft Paddle Mixers are widely applied in many industries, including but not limited to: Building materials, Fly ash conditioning, Animal feeds, Mineral premixes, Instant drinks, Milk powders, Vitamin mixes, etc.

### Features & Advantages:

Compared with other powder mixers, PerMix PFB series Twin-shaft Paddle Mixers are featured in:

1. Very fast mixing to supply a typical mixing time from 10 seconds to only 1 minute
2. Free particle movement
3. Minimal heat and low shear for shear and heat sensitive materials (Due to the fact that low friction without shear in this non-gravity zone is generated, this makes the PerMix PFB series Twin-shaft Paddle Mixer an ideal machine for fragile products that can't tolerate rough handling, even flakes or spray dried bodies remaining intact after mixing.)
4. Easy cleaning and hygienic design with minimal blind corners
5. Low maintenance
6. Big bomb bay door for fast discharging & reduced segregation
7. Liquid addition by spray balls, nozzles, or dripping pipes
8. Leading edges of the ribbons can be coated by Tungsten Carbide for very abrasive materials.
9. Intensive choppers to break lumps
10. Various drive system (single motor/gearbox with chain; dual motor/gearbox, single motor with dual gearbox)

## How It Works:



The PerMix PFB series Twin-shaft Paddle Mixer consists of paddles with special angles that are mounted on twin shafts in a "W" shaped trough. During operation, the two shafts are rotating in opposite direction.

The paddles sweep the entire bottom of both troughs, and materials are lifted floating between the two shafts (as zero-gravity zone) by the centrifugal force generated by the paddles.

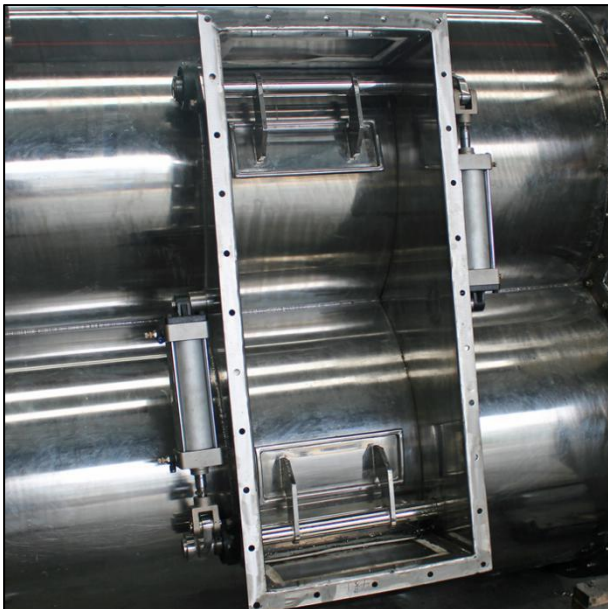
At this weightless zone, mixing of materials of different density is easy and fast because material particle can move freely and randomly, regardless of particle size and density. This brings a rapid and highly homogeneous mixing.

## Overhead Chopper:

Although the PerMix PFB series Twin-shaft Paddle Mixer is featured by its gentle mixing at the weightless zone, it can also achieve rough mixings with additional PerMix Pin Milling Bars to be installed on the top of the paddles.

The PerMix Pin Milling Bars are two rapidly rotating bars with pins and a stationary shroud, which introduce high shear force onto the materials during mixing to break soft lumps and agglomerates. In this case, a fill level of 140% of normal capacity is required.

## Discharge Doors:

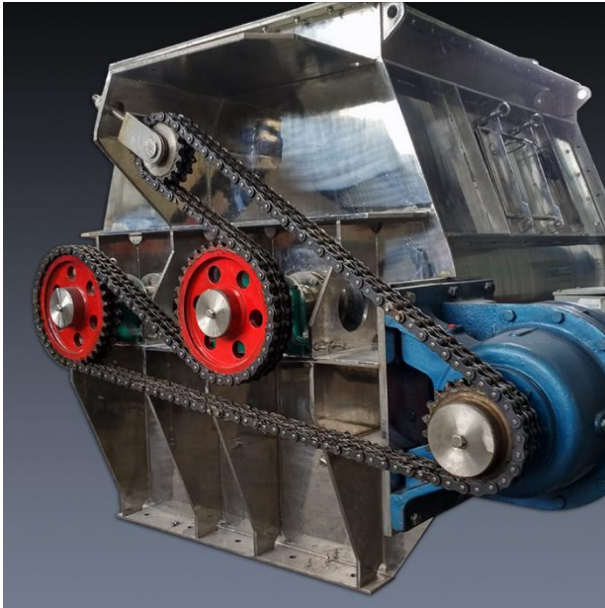


PerMix offers pneumatic discharge valves for the PFB Twin-shaft Paddle Mixer for quick discharging when the paddles are running, eliminating any possible segregation. Each valve is located at the bottom of each basin of the W-shaped trough.

PerMix also supplies the large **Bomb Bay Door** for even faster and complete discharging (see the photo above); with the bomb bay doors, the discharging time can reduce to less than one minute (product and mixer size dependent).



## Drive System:



PerMix can provide both Single Chain Drive system (with one gearbox, and the two shafts, which are overlapping, are synchronized by a heavy duty chain with chain tensioner), and Dual Direct Drive system, in which there are two gearboxes to be connected with the two shafts (tangential).

## Applications:



### **- Chemical Industry**

Detergents, Color pigments, Fertilizers, Explosives, Boric acid, Carbon, Fly ash, Fungicides, Soda ash

### **- Building Industry**

Dry mortar, Blended cements, Tile adhesives/grouting, Brick facings, Cement & Fibers, Flooring materials, Joint compounds, Road lining materials

**- Environmental Applications**

Fly ash conditioning, Filter dust treatment, Sewage sludge, Food waste

**- Feed Industry**

Animal feed, Mineral premixes, Aqua / fish feed, Pet food, Dairy additives

**- Food Industry**

Instant drinks/soups, Infant milk powder, Flour/bread/bakery mixes, Frozen vegetables, Treatment of spices

**- Pharmaceutical Industry**

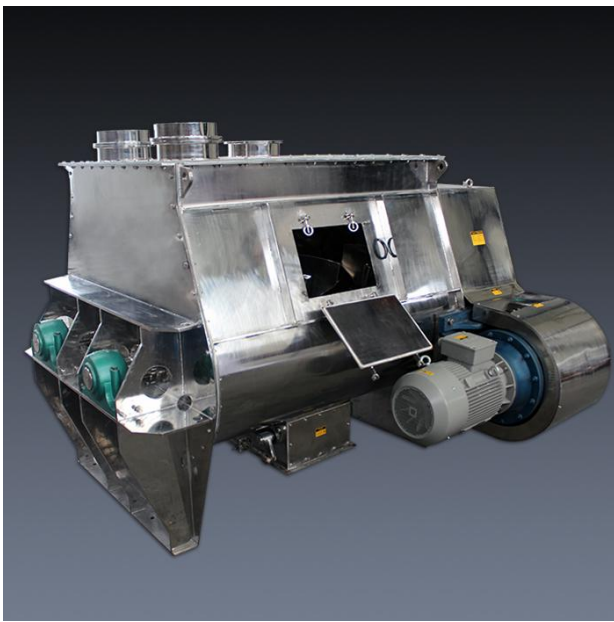
Vitamin mixes, Medical mixes

**Specifications:**

Model	Total capacity (liter)	Working capacity (liter)	Power (*) (kW)	L (mm)	W (mm)	H (mm)	Inlet (**) (mm)	Outlet (***) (mm)	Weight (kg)
PFB-50	50	20-30	0.75-2.2	-	-	-	-	-	250
PFB-150	150	60-90	1.5-4	-	-	-	-	-	300
PFB-300	300	120-180	3-4	1,242	1,278	1,025	1-Φ400	350X40	750
PFB-500	500	200-300	4-7.5	1,408	1,478	1,305	1-Φ400	500X90	1,000
PFB-1000	1,000	400-600	7.5-15	1,875	1,692	1,425	1-Φ500	500X90	1,550
PFB-2000	2,000	800-1,200	15-22	2,275	2,108	1,775	1-Φ500	500X90	2,500
PFB-3000	3,000	1,200-1,800	18.5-30	2,408	2,396	1,955	1-Φ500	500X90	2,900
PFB-4000	4,000	1,600-2,400	22-37	2,822	2,546	2,015	1-Φ500	500X90	3,600
PFB-6000	6,000	2,400-3,600	30-45	3,050	2,980	2,235	1-Φ500	500X90	5,600
PFB-8000	8,000	3,200-4,800	37-55	3,362	3,412	2,425	1-Φ500	800X200	7,100
PFB-10000	10,000	4,000-6,000	45-75	3,538	3,645	2,615	1-Φ500	800X200	8,000

1. Standard mixer is with overlapping paddles. Mixers with tangent paddles & dual drive available as per request.
2. (\*) (\*\*) (\*\*\*) : Changes are available according to the customer's request.
3. All specifications and illustrations are as accurate as is reasonably possible, but they are not binding.
4. PerMix reserves the right to modify the design without notice.

**Gallery:**



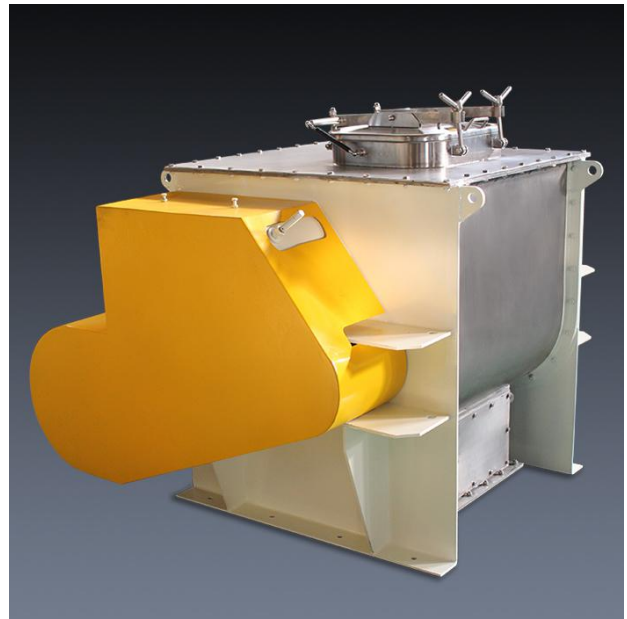
**PFB Mixer Built in All Stainless Steel**



**PFB-3000 Mixer with Twin-Drive System**

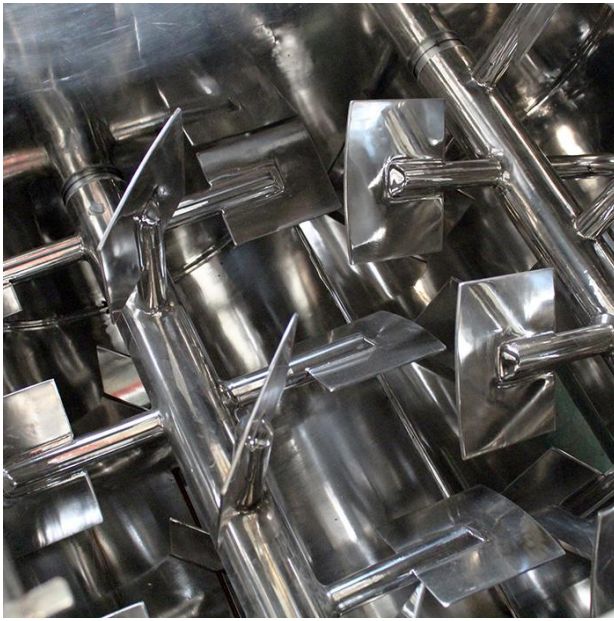


**PFB-500 Twin-shaft Paddle Mixer**



**PFB-500 with Loading Port**





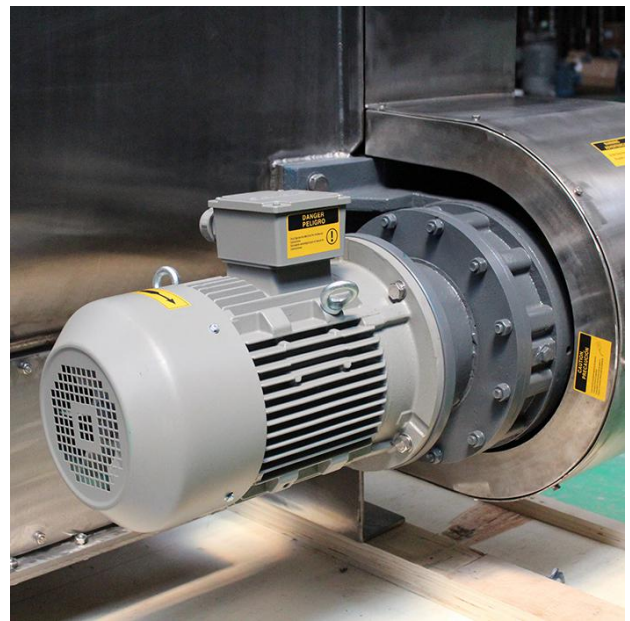
Internal View of Paddle Mixer



PFB Mixer with Hydrodynamic Coupling



Loading Port of PFB Mixer



Twin-shaft Paddle Mixer with Single Drive