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PERFECT MIXING TECHNOLOGIES



PERMIX FLUIDIZED
ZONE MIXERS:
PRECISION MIXING FOR
EVERY INDUSTRY

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PerMix Fluidized Zone Mixers

Redefining Powder Mixing Efficiency

Overview

PerMix Fluidized Zone Mixers (PFB Series) are designed to deliver the highest efficiency in powder, granule, and paste mixing. Unlike conventional ribbon or paddle mixers, they create a fluidized mixing zone — a dynamic, low-shear, high-intensity environment where materials are lifted and suspended in a three-dimensional flow pattern.

The result is rapid, homogenous mixing across all particle sizes and densities, reduced mixing times, and lower energy consumption — making the PFB series the next evolution in mixing technology.

PerMix offers both **Single Shaft (PFB)** and **Dual Shaft (PFBDD)** configurations, with optional **Vacuum Mixer & Dryer combinations (PFBSD & PFBDD)** for complete mixing, drying, and solvent recovery in one system.



Single Shaft Fluidized Zone Mixer (PFB)

What It Is & How It Works

The **PerMix PFB Single Shaft Fluidized Zone Mixer** uses a single, high-speed horizontal shaft equipped with plow or paddle-shaped agitators. These generate a fluidized motion that throws particles upward and outward in a random, intermeshing pattern. This movement eliminates dead zones and achieves uniform mixing in a fraction of the time of conventional mixers.

Optional high-speed choppers can be integrated to disperse agglomerates or assist in adding liquids evenly during the process.

Who Uses It

The PFB is widely used in the **food, nutraceutical, pharmaceutical, chemical, and plastics** industries. It's ideal for dry powder blending, powder-liquid mixing, coating, coloring, flavoring, and micro-granulation applications.

Advantages

- Perfect upgrade from a ribbon mixer — same footprint, exponentially higher efficiency.
- Mixes materials of varying bulk densities with ease.
- Ultra-short mixing times (up to 5x faster than ribbon mixers).
- Energy-efficient design reduces power consumption.
- Easy-to-clean and adaptable for frequent product changeovers.

Disadvantages

- Not ideal for very fragile or heat-sensitive materials that require low agitation.
- Slightly higher initial cost compared to ribbon mixers, offset by lower operating cost and faster ROI.



Dual Shaft Fluidized Zone Mixer (PFBD)

What It Is & How It Works

The **PerMix PFBD Dual Shaft Fluidized Zone Mixer** features two counter-rotating shafts, each with plow or paddle agitators. Together they create overlapping fluidized zones that move material in a multi-directional pattern — lifting, folding, and distributing ingredients quickly and evenly.

This design provides greater torque, enhanced mixing power, and the ability to process more challenging formulations, including higher-moisture or viscous products.

Who Uses It

The PFB is widely used in the **food, nutraceutical, pharmaceutical, chemical, and plastics** industries. It's ideal for dry powder blending, powder-liquid mixing, coating, coloring, flavoring, and micro-granulation applications.

Advantages

- Superior homogeneity and faster batch cycles.
- Handles high-viscosity, high-moisture, or sticky materials.
- Dual drive system provides increased torque and control.
- Adaptable for batch or continuous operation.
- Excellent dispersion of liquids and additives.

Disadvantages

- Requires slightly more headroom and mechanical complexity.
- Higher cost due to dual drive assemblies, but justified by productivity gains.

Vacuum Mixer & Dryer Combinations — PFBSD & PFBD

Both the **Single Shaft (PFBSD)** and **Dual Shaft (PFBD)** Fluidized Zone Mixers are available with integrated Vacuum & Drying systems. This combination allows manufacturers to mix, dry, and recover solvents or moisture in a single sealed system.

The vacuum lowers the boiling point of liquids, enabling gentle yet efficient drying at lower temperatures — ideal for heat-sensitive or volatile materials. Heating and cooling jackets provide precise temperature control, while optional condensers and recovery tanks allow for solvent reclamation.

Applications Include:

- Drying of wet granules or powders after granulation
- Solvent removal in pharmaceutical & chemical production
- Vacuum coating & crystallization
- Food & nutraceutical drying operations



Materials of Construction

304 Stainless Steel

General food-grade applications

316 / 316L Stainless Steel

Pharmaceutical & sanitary processing

Carbon / Mild

General industrial or non-corrosive use

Hardox Steel

Abrasive and heavy-duty applications

Hastelloy

Corrosive or high-purity chemical processes

Titanium

High corrosion resistance and low contamination

All models can be finished to **industrial, sanitary, or pharmaceutical-grade** polish levels.

Optional Features & Configurations

- **Heating & Cooling Jackets** for temperature-controlled processes
- **Vacuum or Pressure Operation** for drying or pressurized mixing
- **Load Cells** for accurate batch control and recipe scaling
- **PLC/HMI Automation** with recipe storage
- **Liquid Addition Ports** and high-speed choppers
- **CIP / WIP Systems** for automated cleaning
- **Gas Purge Systems** for inert gas or nitrogen blanketing

Engineering Excellence

From batch testing to full-scale production, every PerMix Fluidized Zone Mixer is engineered with precision, durability, and innovation in mind. Whether it's upgrading a ribbon mixer to a PFBS, scaling up with a PFB, or adding vacuum drying with a PFBSD/PFBD — PerMix ensures the most efficient, safe, and reliable solution on the market.

PerMix — Mixing Made Better.

Specifications

PerMix Single Shaft Fluidized Zone Mixer

Model	Total L	Min. (L) 25%	Max. (L) 60%	kW	RPM	L (mm)	W (mm)	H (mm)	KG
PFB-5L-CP	5	1	3	1.1	365	800	500	900	120
PFB-10L-CP	10	3	6	1.1	365	800	500	900	140
PFB-15L-CP	15	4	9	1.1	280	850	550	950	160
PFB-20L-CP	20	5	12	1.1	280	850	550	950	180
PFB-30	30	8	18	1.5	140	900	800	900	300
PFB-45	45	11	27	1.5	125	920	820	900	320
PFB-50	50	13	30	2.2	125	950	850	950	400
PFB-60	60	15	36	2.2	115	950	850	950	450
PFB-70	70	18	42	3	115	1,000	870	1,050	550
PFB-100	100	25	60	3	105	1,000	890	1,100	660
PFB-150	150	38	90	3	95	1,050	920	1,200	750
PFB-B-200	200	50	120	3	60	1,235	930	1,005	800
PFB-B-250	250	63	150	4	60	1,300	1,000	1,100	880
PFB-B-300	300	75	180	5.5	60	1,420	1,100	1,190	950
PFB-B-400	400	100	240	7.5	60	1,550	1,200	1,250	1,100
PFB-B-500	500	125	300	11	50	1,630	1,260	1,285	1,200
PFB-B-600	600	150	360	11	50	1,680	1,320	1,330	1,350
PFB-B-700	700	175	420	11	50	1,730	1,380	1,380	1,500
PFB-B-750	750	188	450	11	50	1,780	1,420	1,430	1,650
PFB-B-800	800	200	480	11	45	1,830	1,480	1,480	1,800
PFB-B-1000	1000	250	600	11	45	1,870	1,575	1,505	1,900
PFB-B-1200	1200	300	720	15	45	1,950	1,600	1,680	2,150
PFB-B-1500	1500	375	900	15	45	2,030	1,675	1,730	2,300
PFB-B-2000	2000	500	1,200	22	45	2,280	1,635	1,945	2,800
PFB-B-2500	2500	625	1,500	22	45	2,380	1,700	2,050	3,000
PFB-B-3000	3000	750	1,800	22	40	2,420	1,785	2,165	3,300
PFB-B-4000	4000	1,000	2,400	30	30	2,740	2,100	2,255	4,800

- Mixers can be made to have a total volume of up to 20,000 L.

Specifications

PerMix Double Shaft Fluidized Zone Mixer

Model	Total, L	Working, L (40%)	Working, L (60%)	kW	RPM	L (mm)	W (mm)	H (mm)	KG
PFBS-5L-CP	5	2	3	1.1	365	950	400	610	110
PFBS-10L-CP	10	4	6	1.1	365	1,050	400	610	120
PFBS-15L-CP	15	6	9	1.1	280	1,150	450	640	140
PFBS-20L-CP	20	8	12	1.1	280	1,250	500	670	160
PFBS-30	30	12	18	2.2	155	980	800	1,130	300
PFBS-45	45	18	27	2.2	138	980	850	1,160	320
PFBS-50	50	20	30	2.2	138	1,000	900	1,250	400
PFBS-60	60	24	36	3	134	1,000	950	1,250	450
PFBS-70	70	28	42	3	130	1,150	980	1,250	550
PFBS-100	100	40	60	4	130	1,455	600	1,650	660
PFBS-150	150	60	90	4	120	1,510	650	1,680	700
PFBS-200	200	80	120	5.5	95	1,615	660	1,710	750
PFBS-250	250	100	150	5.5	90	1,680	700	1,750	800
PFBS-300	300	120	180	7.5	90	1,725	715	1,750	880
PFBS-400	400	160	240	7.5	80	1,850	800	1,900	950
PFBS-500	500	200	300	11	80	2,020	870	1,900	1,000
PFBS-600	600	240	360	11	75	2,100	900	2,090	1,200
PFBS-700	700	280	420	15	75	2,200	920	2,100	1,400
PFBS-750	750	300	450	15	75	2,255	960	2,075	1,600
PFBS-800	800	320	480	18.5	75	2,350	1,000	1,765	1,800
PFBS-1000	1000	400	600	18.5	72	2,410	1,050	1,765	1,900
PFBS-1200	1200	480	720	22	72	2,600	1,100	1,800	2,100
PFBS-1500	1500	600	900	22	68	2,715	1,150	1,800	2,200
PFBS-2000	2000	800	1200	30	64	2,910	1,250	1,930	2,700
PFBS-2500	2500	1000	1500	37	64	3,200	1,350	2,100	3,000
PFBS-3000	3000	1200	1800	37	60	3,370	1,400	2,100	3,500
PFBS-4000	4000	1600	2400	45	57	3,710	1,520	2,285	4,400

- Mixers can be made to have a total volume of up to 30,000 L.

Specifications

PerMix Vacuum Single Shaft Fluidized Zone Mixer & Dryer

Model	Total, L	Working, L (40%)	Working, L (60%)	kW	RPM	L (mm)	W (mm)	H (mm)	KG
PFBSD-5L-CP	5	2	3	1.1	256	950	900	610	140
PFBSD-10L-CP	10	4	6	1.1	256	1,050	900	610	160
PFBSD-15L-CP	15	6	9	2.2	196	1,150	1,000	640	180
PFBSD-20L-CP	20	8	12	2.2	196	1,250	1,050	670	210
PFBSD-30	30	12	18	4	109	1,080	880	1,130	380
PFBSD-45	45	18	27	4	97	1,080	940	1,160	400
PFBSD-50	50	20	30	4	97	1,100	990	1,250	500
PFBSD-60	60	24	36	5.5	94	1,100	1,050	1,250	560
PFBSD-70	70	28	42	5.5	91	1,270	1,080	1,250	690
PFBSD-100	100	40	60	7.5	91	1,600	660	1,650	830
PFBSD-150	150	60	90	7.5	84	1,660	720	1,680	880
PFBSD-200	200	80	120	11	67	1,780	730	1,710	940
PFBSD-250	250	100	150	11	63	1,850	770	1,750	1,000
PFBSD-300	300	120	180	15	63	1,900	790	1,750	1,100
PFBSD-400	400	160	240	15	56	2,040	880	1,900	1,190
PFBSD-500	500	200	300	18.5	56	2,220	960	1,900	1,250
PFBSD-600	600	240	360	18.5	53	2,310	990	2,090	1,500
PFBSD-700	700	280	420	22	53	2,420	1,010	2,100	1,750
PFBSD-750	750	300	450	22	53	2,480	1,060	2,075	2,000
PFBSD-800	800	320	480	30	53	2,590	1,100	1,765	2,250
PFBSD-1000	1000	400	600	30	50	2,650	1,160	1,765	2,380
PFBSD-1200	1200	480	720	37	50	2,860	1,210	1,800	2,630
PFBSD-1500	1500	600	900	37	48	2,990	1,270	1,800	2,750
PFBSD-2000	2000	800	1200	45	45	3,200	1,380	1,930	3,380
PFBSD-2500	2500	1000	1500	55	45	3,520	1,490	2,100	3,750
PFBSD-3000	3000	1200	1800	55	42	3,710	1,540	2,100	4,380
PFBSD-4000	4000	1600	2400	75	40	4,080	1,670	2,285	5,500

- Mixers can be made to have a total volume of up to 30,000 L.

Specifications

PerMix Vacuum Double Shaft Fluidized Zone Mixer & Dryer

Model	Total L	Min. (L) 25%	Max. (L) 60%	kW	RPM	L (mm)	W (mm)	H (mm)	KG
PFBD-5L-CP	5	1	3	1.1	256	950	900	610	160
PFBD-10L-CP	10	3	6	1.1	256	1,050	900	610	180
PFBD-15L-CP	15	4	9	2.2	196	1,150	1,000	640	210
PFBD-20L-CP	20	5	12	2.2	196	1,250	1,050	670	230
PFBD-30	30	8	18	4	98	990	880	990	380
PFBD-45	45	11	27	4	88	1,010	900	990	400
PFBD-50	50	13	30	4	88	1,050	940	1,050	500
PFBD-60	60	15	36	4	81	1,050	940	1,050	560
PFBD-70	70	18	42	5.5	81	1,100	960	1,160	690
PFBD-100	100	25	60	5.5	74	1,100	980	1,210	830
PFBD-150	150	38	90	5.5	67	1,160	1,060	1,320	940
PFBD-200	200	50	120	7.5	56	1,200	1,140	900	630
PFBD-250	250	63	150	7.5	49	1,270	1,270	1,050	850
PFBD-300	300	75	180	11	49	1,380	1,400	1,090	1,000
PFBD-400	400	100	240	11	42	1,490	1,490	1,210	1,200
PFBD-500	500	125	300	15	42	1,570	1,640	1,230	1,410
PFBD-600	600	150	360	15	35	1,630	1,710	1,270	1,560
PFBD-700	700	175	420	15	35	1,650	1,740	1,300	1,750
PFBD-750	750	188	450	18.5	35	1,650	1,760	1,300	1,880
PFBD-800	800	200	480	18.5	32	1,710	1,820	1,320	2,060
PFBD-1000	1000	250	600	18.5	32	1,740	1,930	1,320	2,190
PFBD-1200	1200	300	720	22	32	1,930	2,070	1,410	2,380
PFBD-1500	1500	375	900	22	32	2,100	2,190	1,490	2,630
PFBD-2000	2000	500	1,200	30	32	2,520	2,290	1,760	3,500
PFBD-2500	2500	625	1,500	37	32	2,620	2,400	1,870	4,380
PFBD-3000	3000	750	1,800	37	28	2,650	2,510	1,940	5,250
PFBD-4000	4000	1,000	2,400	45	28	3,050	2,890	2,040	5,630

- Mixers can be made to have a total volume of up to 20,000 L.



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Besides, PerMix has been building a network of agents located in Southeast Asia, Australia, Russia, Middle East, Africa, and other countries & regions.