Toshniwal

TOSHNIWAL MIXER

Definition of Mixing

To move every particle to exact position compared to other particle and avoid segregation of already mixed material.



Advantages

- Extremely short mixing time
- Gentle mixing
- Low shear
- Low running cost
- Low maintenance cost
- Precise mixing
- Reliable repeatable mixing quality

Product / Application
Mixing / Chemicals Ingredients

Crop care/Nutrition	:	Micro Nutrients, Pesticide, Herbicide, Various carriers with fertilizer, Peat mass, Lignite, Talc Powder, Broth Solution
Detergent Powders	:	Carriers, Acid slurry, Perfume
R&D	:	Various Powders with Liquid Chemicals
Powder Metallurgy	:	Metal powder, Iron ore powder, Powder coatings, Plastic compound, Brake pad
Water Treatment	:	Chemicals for purification
EPS	:	Coating of chemicals on EPS Beads, Coating chemicals
Foundry Chemicals	:	Non ferrous foundry fluxes
Textile / Leather Chemical	:	Coating to Tanners, Finnishers, Scouring agent, etc.,
Thermosetting Resins	:	Powdered Thermostat Resins + additives
General	:	Welding Flux, Cork Sheet, Mosquito coil, Fragrance Stick, Catalysts Perfumary Stick, Enzyme, Dyestuffs, Pigment, etc.,

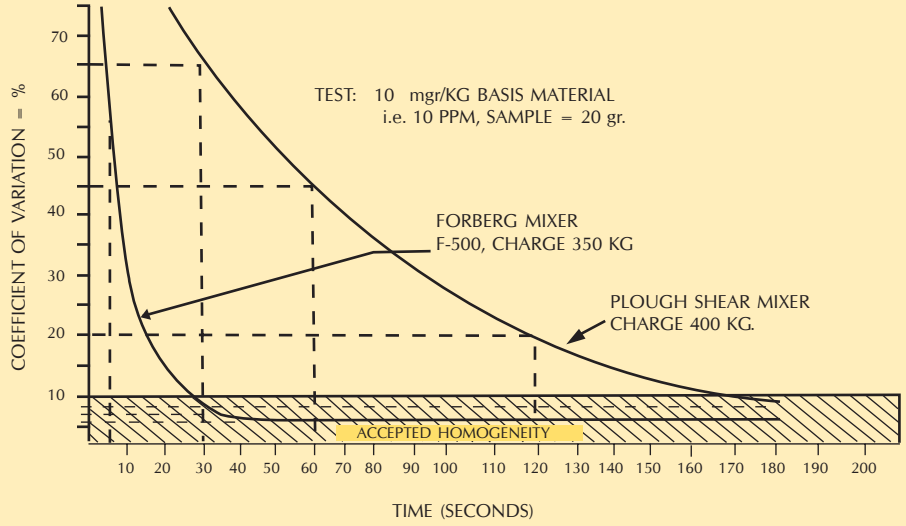
Fluidized Zone Mixing System

Process

- Twin counter rotating shaft with angled paddles creates Fluidized Zone for homogeneous mixing irrespective of size / shape of the ingredients in weightless condition.
- Fluidized Zone eliminates the gravitational force thereby facilities to achieve uniform distribution of coarse and fine ingredients in very short duration.
- No frictional heat generation, ideally suitable for heat / air sensitive and hygroscopic powder ingredients homogeneous mixing. Gentle handling ensures no degradation for the ingredients and facilitates to achieve in technical performance in the mixed product.
- High speed Pin Mill system gives required high shear force to disperse / break soft agglomerates.
- Flexible filling volume from 40-140%.
- Twin Bombay door mechanism ensures complete discharge of mixed product in short time.

Mixing accuracy

The figure shows a mixing curve brought forward after tests done by an international research institute in Germany.



Standard Options Include

Spray Setup

Liquid can be sprayed through nozzles with pressure vessels arrangements.

Control Unit

Available as simple operating unit or as fully automated and integrated system with PLC.

CIP System

A rapidly rotating spray nozzle cleans the interior quickly and efficiently.

Hot-air Drying

Hot air can be injected to dry added fluids fast. This system can be used in combination with the fluid injection system or CIP.

Complete Stainless Steel Version

Apart from the components that come into contact with the product all the other components can also be delivered in stainless steel.

Turnkey Projects

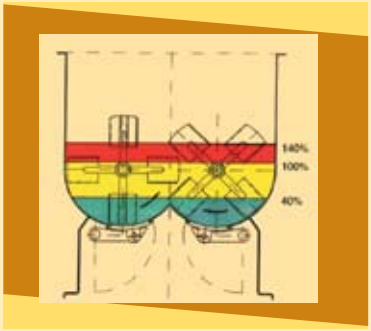
Complete production unit with filling and transport systems, hoppers and (big-bag) filling installations.

Shaft Seals

Self lubricant and water resistant design.

Function and Accessories

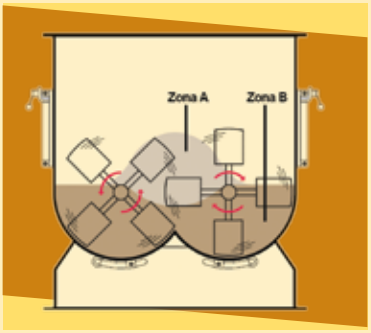
Filling level



Toshniwal mixer has a very flexible filling level, where the mixer volume describes the working volume and not the total mixer volume. 100% working volume is nominal filling level, and the mixer can work from 40% to 140% filling, as shown on the sketch. The same perfect mixing result will be achieved independent of bulk density and material properties. Add a few seconds more of mixing when operating at the filling borders, but a good mixing result will be achieved.

The sketch indicates a minimal mixing volume of 40% (Blue colour),100% volume (Yellow colour) and a maximum volume of 140% (Red colour).

How the mixer works



The two shafts of Toshniwal mixer are counter rotating, which lifts the material up in the middle of the mixer, also called the fluidized zone (A). The angular paddles are welded to the paddle shafts, which give an overlapping rotation in the middle of the mixer and sweeping the entire bottom of the mixer according to specified clearance. This gives a mixing pattern as shown on the drawing. In zone (B) we have counter clockwise rotational movement along the perimeter of the mixer. In zone (A), which is the fluidized zone, the particles have freedom of movement, which again ensures that we achieve a fast and homogeneous mixture. The fluidized zone (A) and the transport zone (B) are the basic principle behind Toshniwal mixer's technology for the best possible mixture.

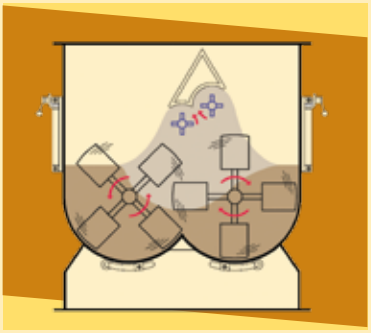
Liquid Addition – FDB



When liquid is added into fine powder (small particles), on FDB (Flow Distortion Bar) is used. The FDB is a rotor with radial pins. The pins throw the particles at high speed and create a horizontal curtain across the liquid stream. The single particles exposure to the liquid is short and ensures a good distribution of the liquid in the powder.

The mixer should have a filling of approximately 120% when the FDB is used.

Mixing and Breaking with PMS

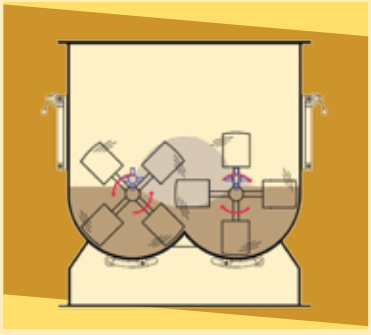


PMS (Pin Mil System) is used when we need to break lumps in the mixture or need higher shear forces during mixing. This system consists of two high speed rotating shafts with welded pins mounted above the fluidized zone.

A hood with intersective pins is placed over the shafts and this ensures a proper steam of product and good crushing effect on the product.

The mixer should have approximately 120% filling when the PMS is used.

Tulip Knives



Tulip knives are mounted in the lower part of the mixer's end wall (see figure) and are used for breaking of lumps at low filling. The tulip knives add high shear forces independent of the filling level.

Cleaning of the machine is easier with the tulip knives and there is no need for a hood above the fluidized zone, which improve the availability

Toshniwal Mixers

Specifications

Model	Batch Size (Litres)			Motor Rating (H.P)*	
	Min	Nor	Max	Std	Max
F-20	8	20	28	1.0	1.5
F-60	24	60	84	3.0	5.0
F-120	48	120	168	5.0	7.5
F-200	80	200	280	5.0	10.0
F-350	140	350	490	5.0	10.0
F-500	200	500	700	10.0	20.0
F-750	300	750	1050	15.0	30.0
F-1200	480	1200	1680	20.0	50.0
F-1500	600	1500	2100	30.0	60.0
F-2000	800	2000	2800	40.0	60.0
F-2500	1000	2500	3500	40.0	60.0
F-3600	1440	3600	5040	50.0	75.0
F-5000	2000	5000	7000	60.0	100.0

STD - Standard Motor Rating / Max - Maximum Motor Rating

* The motor rating is dependent on the material Bulk density etc. to be mixed.
Technical data might be changed without notice.

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The ultimate in mixing technology...

TOSHNIWAL PHLAUER MIXER

Single Shaft Batch Mixer With Shear Makers

Applications:

- Decorative Gypsum Based Material
- Powdered Paints
- Coloured Tile Grouts
- Stucco & Grout
- Blended Pigments For Roofing Tiles
- Fluorescent Pigment
- Coloured Brick Material
- Powder Coating



Colour Development :

1 Minute Per Ton Up To10 Tones in 10 Minutes



Shear Makers



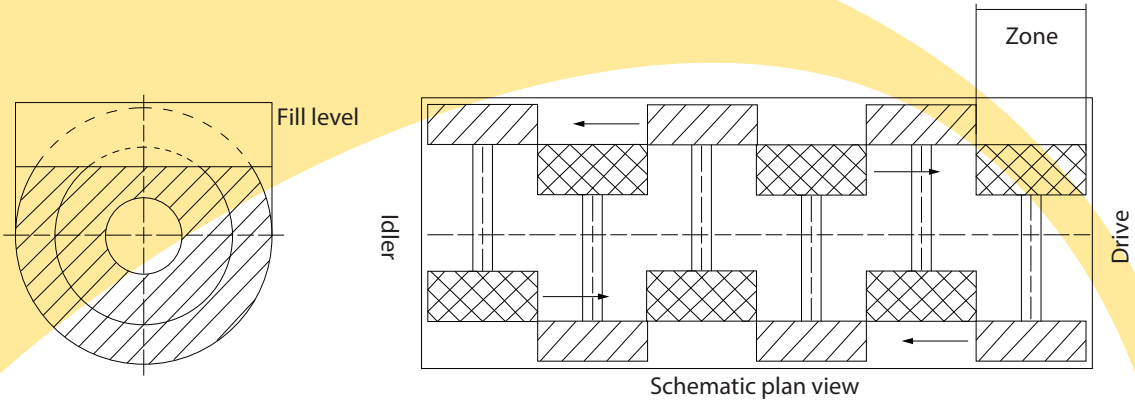
Draw Tests

Shear makers to break lumps, dispersion of color and distribution of fibrous materials.

Mixing Zone For Single Rotor Mixers

Mixing is a randomization process that has particles changing place, and can be changing properties such as size and moisture content.

The modular concept is a design specifically invented to offer premium performance in a configuration offering the best characteristics to do a job.



The unique rotor and paddle design divides the housing into smaller zones each served by at least two paddles. All particles are moving hence there is a dynamic transaction between zones, voids are created mechanically and particles are directed to randomly fill the voids. The accuracy and the speed of mixing is achieved by the high volume of voids created for mixing.

TOSHNIWAL PHLAUER MIXER
Specification

Model Number	Capacity (Liters)	Horse Power	
		Min	Max
AF-182-4	85	2	4
AF-202-6	115	3	5
AF-243-6	250	5	7.5
AF-304	400	7.5	10
AF-365	750	10	15
AF-366	900	15	20
AF-426	1200	20	30
AF-488	2000	40	50
AF-588	2800	40	60
AF-688	4000	50	60
AF-6810	5500	60	75

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