



TRUDEFEND

PHARMACEUTICALS • CHEMICALS • COSMETICS • FOOD
PAINT & COATING • CLEANING PRODUCTS ETC...



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Why Choose Us?

Turnkey Project Solutions

Comprehensive support for setting up pharmaceutical manufacturing plants, including OSD (Oral Solid Dosage), liquid oral, and semisolid formulations. From concept to commissioning, we deliver fully operational facilities.

Engineering & Process Innovation

Technical support for optimizing existing equipment & processes. Our engineering solutions enhance efficiency, reduce downtime, & drive innovation in pharmaceutical manufacturing.

Formulation & Process Development

Expertise in developing robust formulations & scalable manufacturing processes for a wide range of pharmaceutical dosage forms, ensuring quality, compliance, and market readiness.

Complex Molecule Development

Specialized support for challenging development projects, including BCS Class III and IV molecules. Our scientific approach helps overcome solubility, permeability, and bioavailability hurdles.

- Commitment to quality, innovation, and industry standards
- Reliable and customizable pharmaceutical equipment solutions
- Exceptional after-sales support and 2-year service warranty
- Proven track record in delivering high-performance solutions
- Cost-effective options ensuring optimal performance
- Ensures regulatory adherence and compliance



FLUID BED PROCESSOR/DRYER

Engineered to meet diverse powder processing needs, our Fluid Bed Systems are trusted across pharmaceutical, nutraceutical, and chemical industries. Offering precision, compliance, and scalability, they combine advanced granulation and drying technologies with a modular design to suit every stage of production—from lab trials to full-scale manufacturing.

Product Highlights

- **Scalable Solutions:** From lab to production Scale.
- **Integrated Technologies:** Efficient drying and top-spray granulation.
- **Regulatory Compliance:** Fully equipped with 21 CFR Part 11-compliant PC control systems.
- **Custom Configurations:** Optional standalone or granulation-line WIP systems..

Technical Advantages

- Smart Filter Bag Shaking Mechanism
More efficient than traditional blowback systems.
- Precisely Engineered Safety Vent
Pressure-shock tested to ensure operator safety.
- Interchangeable Operations
Seamless transition between FBP and FBD functions.
- Anti-Choking Gun System
Designed to prevent clogging during bottom spray processing for uninterrupted performance.
- Quick-Switch Bowl Assembly
Enables easy change between bottom spray and top spray applications.



Model	FBP-30	FBP-60	FBP-120	FBP-200	FBP-300	FBP-500	FBP-600
Product Container Volume (Liters)	110	200	425	625	925	1550	1800
Batch Capacity (Kg) (Bulk Density 0.6 gm/cc)	20-30	50-60	100-120	150-200	250-300	400-500	500-600
Blower Motor (HP)	7.5	12.5	20	25	40	60	75
Steam Consumption (Kg/hr) (Steam Pressure 3.5kg/cm ²)	25-40	30-50	60-100	130-170	200-250	250-300	300-350

RAPID MIXER GRANULATOR



Advanced Wet Granulation Reinvented: Trudefend Rapid Mixer Granulator (RMG/HSMG)

- High Shear Mixer Granulator (HSMG) is meticulously engineered for high-efficiency, 'high-speed wet granulation, ensuring optimal blending, agglomeration, and densification of powders.

Why Trudefend HSMG? Engineered for Performance. Built for Compliance.

- Powder segregation due to difference in PSD- Our advanced shear flow mechanism ensures homogeneous integration.
- Inconsistent granulation endpoints-Eliminated through real-time torque feedback, controlled binder addition, and programmable granulation cycles.

Technical Excellence, Process Reliability

Designed to address real-world formulation challenges — minimizing batch variability, optimizing granule quality, and enhancing process reproducibility.

- PLC/SCADA-based automation with recipe management
- Precision dosing systems for liquid binder addition
- Tool-less dismantling for easy cleaning and validation
- CIP/SIP compatibility for aseptic-grade operations

On request, systems can be customized to comply with:

CE, UL, ATEX, IEC, ISO 9001:2015, and EU Machinery Directive 2006/42/EC.

VIBRO SIFTER

it is used in various industries to separate materials based on particle size, grading, and scalping, especially in pharmaceutical, chemical, food, and cement processing.



Key Features

- All contact part SS 316 / SS 316L as per cGMP standard.
- Available model 12", 24", 30", 36", 42", 48", 60" & 72".
- Silicon moulded lead free screen of different mesh size as per requirement is provided.
- Vibratory motor.
- Starter is provided.

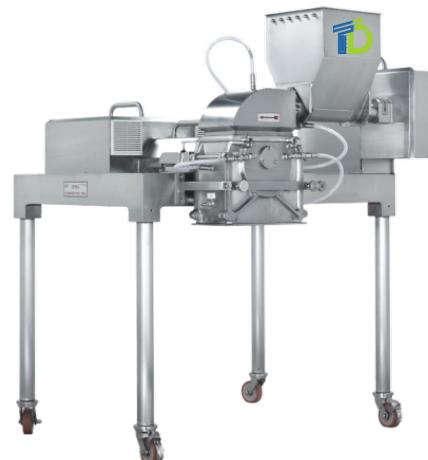
MULTI - MILL / CITY MILL

Multi Mill is used for wet and dry granulation, pulverization, milling, shredding, chopping, size reduction in Pharmaceuticals, Chemicals, Cosmetics, Ceramics, Colors, Dyestuff, Food products etc.



Key Features

- All contact part SS 316 / SS 316L as per cGMP standard.
- Available model 1HP, 3HP & 5HP.
- SS 316 screen is provided.
- On-off push button provided.
- ACVFD for variable speed



CO-MILL

A Co Mill (Cone Mill) is used for uniform size reduction, granulation, and milling of wet or dry materials. It features a conical screen, variable speed motor, and interchangeable screens. Designed for low heat generation, minimal fines, and high throughput, it ensures dust-free operation and easy cleaning for GMP compliance.



POWDER TRANSFER SYSTEM (PTS)

A Powder Transfer System (PTS) is a closed, vacuum-based device designed for safe, efficient, and contamination-free transfer of powders. It ensures dust-free operation, minimal product loss, and operator safety. Ideal for toxic or sterile materials, it integrates easily with process equipment, is GMP-compliant, and supports CIP/SIP for hygienic maintenance.

Key Features

- Closed, contamination-free operation
- Vacuum/pressure-based transfer
- Handles toxic or sterile powders
- GMP-compliant design
- Reduces manual handling
- CIP/SIP compatible
- Minimizes dust and product loss
- Enhances operator safety



IPC LIFTER

An IPC (In-Process Container) Lifter is a critical piece of material handling equipment in pharmaceutical manufacturing, used for transferring powders or granules safely and hygienically between processes, (e.g., from a blender to a granulator or tablet press).



IPC Lifter – Technical Specification

An IPC Lifter is engineered for lifting and positioning Intermediate Bulk Containers (IBCs) or IPCs in powder/granule transfer applications, adhering to GMP standards. Available in fixed, mobile, wall-mounted, or column types, it operates via hydraulic, electric, or pneumatic mechanisms. With customizable lifting capacities from 100 kg to 1000 kg and lifting heights up to 3000 mm, it offers efficient, safe operation. Control is PLC-based with HMI, featuring manual or auto modes. Constructed from SS 304/316L with electro-polished or matt finishes, it includes overload protection and antistatic PU wheels. Optional 180°/360° rotation ensures compatibility with standard IBC/IPC sizes.

OCTAGONAL BLENDER

An octagonal blender is a type of industrial blender, characterized by its octagonal-shaped container, used for the mixing and blending of dry powders and granules.



Key Features

- All contact parts SS 316/ SS 316L as per cGMP Standard.
- Internal finish confirming 220grits to 320 grits, outside matte finish 180 grits.
- VFD for Change the RPM of blender.
- Model available: 5 Ltrs to 10000 Ltrs.

Model	TD-OCB-10	TD-OCB-30	TD-OCB-50	TD-OCB-100	TD-OCB-200	TD-OCB-300	TD-OCB-500	TD-OCB-600	TD-OCB-750	TD-OCB-1000	TD-OCB-1250	TD-OCB-1500
Gross Volume (Ltrs.)	10	30	50	100	200	300	500	600	750	1000	1250	1500
Working Volume (Ltrs.)	7.5	22.5	37.5	75	150	225	375	450	565	750	940	1125
Motor (HP)	0.5	0.5	1.0	2.0	2.0	2.5	3.0	3.0	5.0	5.0	7.5	7.5

V BLENDER

It comprises two inclined cylinders which are fixed together at an angle of 70° to 90° to create a conical shape



Key Features

- SS 316/316L contact parts (cGMP standard)
- Manual rotating facility with handwheel for inching
- ACVFD for variable speed control

Model	TD-VB-50	TD-VB-100	TD-VB-200	TD-VB-300	TD-VB-500	TD-VB-1000
Gross Volume (Ltrs)	50	100	200	300	500	1000
Approx. Capacity (Kgs)	25	45	90	135	225	445
Motor HP	1.5	2	3	3	7.5	10
Overall Height (mm)	1400	1600	2475	2480	2785	3828
Overall Width (mm)	780	780	1025	1080	1150	1275
Overall Depth (mm)	1150	1450	1550	1575	1925	2050

DOUBLE CONE BLENDER

A double cone blender is a type of tumble blender used for mixing dry powders and granules, featuring a cylindrical section with two cone-shaped ends that rotate, facilitating a gentle, low-impact mixing process.



Key Features

- All Contact Parts SS 316/316L as per cGMP Standard..
- Manhole with gasket is provided to fix the baffles and for ease of cleaning the shell.
- Charging and discharging is through a butterfly valve.
- A conical adaptor can be provided for fixing charging drum after butterfly valve.
- ACVFD for variable speed
- Available Models from 5 to 6000 Liters.

Model	TD-DCB-50	TD-DCB-100	TD-DCB-250	TD-DCB-500	TD-DCB-1000	TD-DCB-1500	TD-DCB-2000	TD-DCB-5000	TD-DCB-6000
Gross Volume (Ltrs)	50	100	250	500	1000	1500	2000	5000	6000
Working Volume (Ltrs)	25	50	125	250	500	750	1000	2500	3000
Motor HP	1	1	2	3	5	7.5	15	20	20
Speed (RPM)	4-8	4-6	4-6	4-6	4-8	4-6	4-6	4-6	4-6
Discharge Valve (inches)	4	8	8	8	6	10	12	12	12

VACUUM TRAY DRYER

A vacuum tray dryer is a batch drying machine with several heating plates. It is widely used in the pharmaceutical, chemical, food, and herbal industries. The smooth surfaces of the heating plates and trays allow for optimal heat transfer and minimize the amount of heat loss.

Key Features

- Provision for Nitrogen purging
- Construction & Finish as per cGMP Standards
- Dial Type Temperature Gauge in Body
- Validation Port
- GMP compliance design
- Precise temperature and Vacuum control.
- Multiple removable trays.
- Available from R&D Scale to Commercial Scale.



TRAY DRYER

A Tray Dryer is used for drying granules, powders, and other materials in pharmaceutical, chemical, and food industries. It consists of double-walled insulated chambers with SS 316L trays, a controlled heating system (electric/steam), and a forced air circulation system for uniform drying. It ensures GMP compliance, efficiency, and easy maintenance.

Key Features

- Uniform drying with forced air circulation
- SS 316L contact parts
- Double-walled insulated chamber
- Electric or steam heating
- GMP-compliant design
- Multiple removable trays
- Easy cleaning and maintenance
- Precise temperature control



ROLL COMPACTOR

Roller Compactors for the Chemical Industry:

Roller compaction by Trudefend enable the transformation of raw powders into granules with improved flowability, higher density, and superior processability. Through dry compaction, high mechanical force compresses powders into ribbons, which are then granulated into uniform granules.

Process Overview:

1. **Feeding** – Precisely dosed raw material is fed using horizontal screw systems.
2. **Compaction** – Powder is compressed between two rollers into dense homogenous flakes.

Why Trudefend?

- **Vertical Roller Design:** Independent feeding and superior deaeration.
- **Vent-Feeder:** Ensures uniform feed, air venting, and granule recirculation.
- **Vacuum Support:** Ideal for light, fluidizing powders with low bulk density.

Key Features

Type: Dry granulation system
Feed System: Screw feeder with variable speed
Rollers: Water-cooled, smooth/knurled surface
Output Capacity: 5–500 kg/hr
Compression Force: hydraulic/pneumatic system
Material: SS 316L contact parts
Control: PLC with HMI
Safety: Interlocks, emergency stop
Compliance: cGMP standards
Easy cleaning and tool-free assembly



COATING PAN



Conventional Coating Pan is made after a careful study of needs of expert coaters such as Rotation Speed, Angle of Pan, volume and temperature. It is elliptical in shape, mounted at 30° angle. Hot air blower thermostat of the pan delivers required quantity of air at selected temperature between 40°C to 80°C

Key Features of Fluid Bed Dryer

- SS 316/316L contact parts as per cGMP standard
- Easy replacement of polishing pan and different coating pan sizes
- Spray coating system with peristaltic pump
- ACVFD for variable speed control
- PLC with touch-screen color HMI
- Available pan sizes: 12" to 72" diameter

AUTOCOATER

A tablet autocoater is an automated machine designed for coating tablets in pharmaceutical manufacturing. It typically features a rotating drum or pan where tablets are coated with a polymer or sugar-based solution.

Key Features

- cGMP-compliant with SS 316/316L contact parts.
- Perforated pan & automated spray system for uniform coating.
- CIP system for easy cleaning and maintenance.
- Available in multiple capacities for R&D to industrial use.
- IPC/PLC-SCADA based system for 21 CFR compliance (GMAP5)
- Internet Of Things (IoT) Enable
- Automatic tablet loading and unloading
- Recipe driven Wash-in-Place (WIP) system
- Isolator compatible for OEL 4 and 5 products
- Peristaltic pumps for precise dosing of coating material
- Capacity Range : 500 gms to 1,000 Kg



MASS MIXER

Mass Mixer is designed to perform smooth operations for through mixing equipped with safety transparent dust cover & specially designed self adjusting sealing arrangement, which ensures the restriction of black particles enter the mixing drum.

Key Features

- All Contact Parts SS 316/316L as per cGMP Standard.
- Differences in volume ranging to 1:1,00,000 can be mixed homogeneously within a few minutes.
- ACVFD for variable speed

Model	TD-MM-50	TD-MM-100	TD-MM-150	TD-MM-200
Gross Capacity (Ltrs.)	110	220	330	440
Working Capacity (Ltrs.)	88	156	234	309
Motor HP	3	5	7.5	7.5
RPM	35	30	30	30



LIQUID MANUFACTURING PLANT

A Liquid Manufacturing Plant is designed for the efficient production of oral and external liquid formulations. It includes a sugar melting vessel, manufacturing vessel, and storage tank, all made from SS 316L. Features include agitators, filtration units, transfer pumps, CIP/SIP system, and PLC-based controls, ensuring GMP compliance and batch consistency. Ask ChatGPT

Key Features

- SS 316L contact parts
- Agitators and transfer pump
- CIP/SIP compatible
- GMP-compliant design
- Sugar melting, manufacturing
- Sinline filtration system
- PLC-based controls
- Efficient batch processing



INLINE HOMOGENIZER

Homogenizers are used to create uniform mixtures, emulsions, and dispersions by reducing particle size and forcing materials through a narrow space, making them suitable for various industries like food, pharmaceuticals, and cosmetics.

Key Features

- Versatile applications in biological, pharmaceutical, and food industries.
- Types: Bead mill, rotor-stator (up to 75,000 rpm), and automated homogenizers.
- Scalable throughput, from low to high-volume sample processing.



STAND HOMOGENIZERS

Stand homogenizers are high-speed mixing devices used for emulsifying, suspending, and blending substances in pharmaceutical and chemical industries. Mounted on a stable stand, they offer adjustable height and speed. Ideal for lab and pilot-scale production, they ensure uniform particle size distribution, improved consistency, and enhanced product stability in GMP environments.

Key Features

- High-speed emulsification and mixing
- Adjustable height and speed control
- Stable stand-mounted design
- Uniform particle size distribution
- GMP-compliant construction
- Easy to clean and operate



OINTEMENT MANUFACTURING PLANT



The Ointment Manufacturing Plant consists of a set of equipment designed for ointments ranging from 5 kg to 5,000 kg. They are excellent devices for the pharmaceutical and cosmetic industries.

Key Features

- SS 316/316L contact parts (cGMP standard)
- Jacketed main vessel with top-entry anchor
- Bottom entry homogenizer with cooling system
- Hydraulic lid lifting system
- Wax/Oil & Water phase vessels with stirrers
- Vacuum pump & lobe pump with gear motor
- PLC with touch-screen HMI, ACVFD for motors
- Heating: Steam / Electric / Thermic Fluid
- Capacity: 5 Kg to 5000 Kg

STARCH PASTE KETTLE

The Starch Paste Kettle is designed for uniform heating and preparation of starch paste used in granulation. Constructed with SS316/SS304, It includes a tilting mechanism for easy discharge, insulation for energy efficiency, and a control panel for temperature regulation. Available in capacities from 25 to 500 liters, the unit meets GMP standards.



Key Features

- **Hemispherical jacketed bowl** ensures efficient and uniform heating
- Heating medium: **Steam or hot water**
- **Insulated body** to reduce heat loss and improve safety
- **Temperature control panel** for precise heating control

STORAGE TANK

Storage Tank is designed for storing and homogenizing liquid formulations in pharmaceutical and cosmetic industries. Constructed with SS 316L (contact parts), it includes a top or bottom-mounted homogenizer, agitator, and temperature control jacket. The tank is GMP-compliant, CIP/SIP compatible, with a sanitary finish and PLC-based controls for process consistency.

Key Features

- SS 316L contact parts
- Integrated high-shear homogenizer
- Jacketed for heating/cooling
- Agitator for uniform mixing
- GMP-compliant design
- CIP/SIP compatible
- PLC-based control
- Sanitary surface finish



SPARKLER FILTER PRESS

A Sparkler Filter Press is used for solid-liquid separation in pharmaceutical and chemical processes. Made from SS 316L, it features multiple filter plates, leak-proof design, and uniform filtration under pressure.

Key Features

- SS 316L contact parts
- Multi-layer filter plates for efficient filtration
- Leak-proof, gasketed design
- Uniform pressure distribution
- Easy disassembly and cleaning



MANUFACTURING VESSEL

A manufacturing vessel is used for blending, heating, and processing liquid or semi-solid products in pharmaceutical and chemical industries. Made from SS 316L, it includes an agitator, jacketed body for heating/cooling, CIP/SIP ports, and a PLC-based control system. It ensures GMP compliance, hygiene, durability, and process consistency.

Key Features

- SS 316L contact parts for hygiene
- Jacketed for heating/cooling
- Agitator with variable speed
- CIP/SIP compatible
- GMP-compliant design
- PLC-based controls
- Sanitary finish
- Leak-proof construction



COLLOID MILL

A colloid mill is a machine that is used to reduce the particle size of a solid in suspension in a liquid, or to reduce the droplet size in emulsions. Colloid mills work on the rotor-stator principle: a rotor turns at high speeds (2000-18000 RPM).

Key Features

- Particle Size Reduction: Used for reducing solid particles in suspensions and droplet sizes in emulsions.
- Enhances Stability: Improves suspension and emulsion stability.
- Versatile Applications: Used in pharmaceutical, food, and chemical industries.



AUTOCLAVE

An autoclave is a device that utilizes steam under pressure to sterilize equipment, effectively eliminating bacteria, viruses, fungi, and spores.



Key Features

- High-Temperature Sterilization: Operates at temperatures typically between 121°C to 134°C, ensuring effective sterilization.
- Pressurized Steam System: Utilizes steam under pressure to achieve thorough sterilization.
- Safety Mechanisms: Equipped with features like safety valves and pressure gauges to ensure secure operation under high-pressure conditions.

• ACCESSORIES •





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