

- ▶ Cutting-edge Technology
- ▶ Suitable For Various Industries
- ▶ Optimal Performance
- ▶ Wide-ranging Applications
- ▶ Streamlined Functionality

SPRAY DRYER

Efficient Drying
Solutions For
Diverse Applications



SPRAY DRYER

Spray drying is an advanced process that transforms liquid or slurry into dry powder rapidly using a high-temperature gas.

Widely acclaimed for its efficacy, this method is particularly favored in handling thermally-sensitive materials, notably within the realms of food & pharmaceutical industries. Notably, spray drying ensures a uniform particle size distribution, making it an indispensable technique for various industrial products like catalysts.

In the process, air serves as the primary heated drying medium; however, for applications involving flammable solvents such as ethanol or materials sensitive to oxygen, nitrogen emerges as the preferred alternative.

Central to the spray drying mechanism is the transformation of a liquid stream into a solid solute or suspension & the concurrent conversion of the solvent into vapor. The resultant solid is typically collected in a drum or cyclone. The liquid input stream is meticulously atomized through a specialized nozzle into a heated vapor stream, inducing rapid vaporization. The fine droplets generated undergo swift solidification as moisture dissipates, with the nozzle ensuring minimal droplet size to optimize heat transfer & water vaporization rates.

Pratik Enterprises excels in crafting custom spray dryers for dairy, pharmaceutical, chemical, & food industries. Well-versed in each sector, our precision-engineered solutions ensure optimal performance, exceeding industry standards. Elevate your processes with Pratik's expertise.



Our powder processing equipment, spanning detergents, dyes, fragrances, paints, special chemicals, & compounds, consistently delivers exceptional results. Tailored solutions enhance process reliability, ensuring unparalleled product quality & consistency.



In the pharmaceutical sector, our spray dryers offer a crucial edge, ensuring compliance, product integrity, precise formulations, optimal drug delivery, & efficient production, meeting high industry standards.



Revolutionizing dairy production, our spray dryers offer precise control over moisture, preserving nutritional integrity. Resulting in superior quality powdered milk, whey, & dairy derivatives, meeting industry's stringent demands.



Tailored for drying food ingredients, flavors, enzymes, fruit juices, tea, coffee, protein powders, & more, our bespoke spray drying solutions guarantee optimal performance, meeting the specific needs of diverse industries.



Spray Dryer LAB SCALE

Variants: 0.5 ltr to 1.5 ltrs/hr water evaporation rate.

Attributes:

- ▶ CGMP Model.
- ▶ For Aqueous & Solvent Feeds.
- ▶ Hot Air Flow : Co-Current / Counter Current.
- ▶ Nozzle Type: Two Fluid / Three Fluid.
- ▶ Orifice Diameter: 0.5 to 2 mm with D-Blocker Assembly.
- ▶ Ultrasonic Atomizer with Generator.
- ▶ Integration of Hot Plate with Magnetic Stirrer.
- ▶ Inert Loop System (Optional).
- ▶ PLC Based/Scada / 21 CFR Compliance (Optional).
- ▶ Containment Model Possible with Isolator Chamber.
- ▶ Complete unit on Wheels.
- ▶ Minimal Floor Area Consumption.



Spray Dryer **PILOT SCALE**

Variants: 5 ltrs to 25 ltrs/hr water evaporation rate.

Attributes:

- ▶ CGMP Model.
- ▶ For Aqueous & Solvent Feeds.
- ▶ Multiple atomization techniques possible.
- ▶ Hot air flow type mixed flow/co-current/counter current.
- ▶ Handling of high potent drug possible.
- ▶ PLC Based/Scada/21 CFR Compliance (Optional).
- ▶ Maximum inlet temperature 300°C.
- ▶ Twin Cyclone Possible for better collection efficiency.
- ▶ Control over RH %.
- ▶ Inert Loop System (Optional).
- ▶ Minimum air pollution controlled through. Filtration / Scrubbing.
- ▶ CIP/WIP Possible.



Spray Dryer PRODUCTION SCALE MACHINE

Variants: 50 Itrs to 100 Itrs/hr water evaporation rate.

Attributes:

- ▶ CGMP Model.
- ▶ For Aqueous & Solvent Feeds.
- ▶ Multiple Atomization techniques possible. Integrated Fluid Bed / Static / Vibratory Continuous Dryer Possible.
- ▶ Maximum inlet temperature 300°C. Twin / Triple / Quadruple Cyclones Possible for better. Energy Efficient Technology ensuring Low Energy Consumption. Control over critical Process Parameters to achieve the Particle Properties.
- ▶ Inert Loop System (Optional).
- ▶ Minimum Air Pollution through Filtration / Scrubbing. Built in CIP / WIP Possible.

ATOMIZATION TECHNIQUES

There Are 4 Types Of Atomization Techniques



Pressure Nozzle

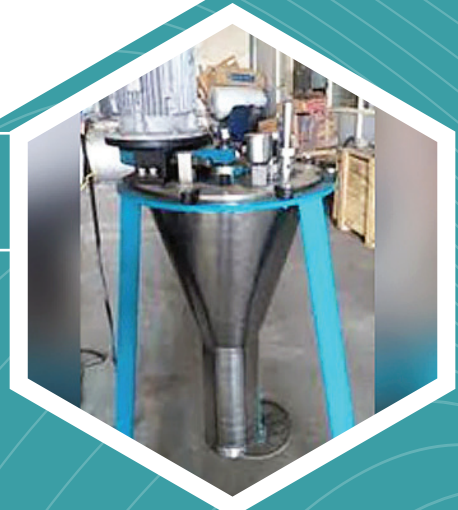


Ultrasonic Nozzle

**Two-Fluid
Nozzle Atomization**



Rotary Atomizer





INTRODUCING **SPRAY FREEZE DRYING**

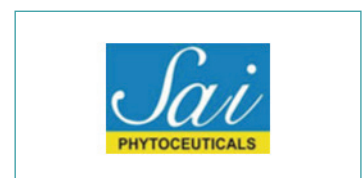
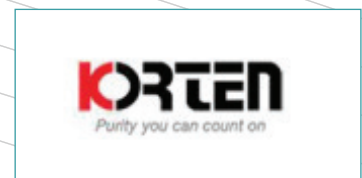
Revolutionize Your Process: Step into the future with Spray Freeze Drying. Uncover unmatched product quality & preservation. Join the innovation journey & transform your manufacturing capabilities today.

In our spray-freeze-drying procedure, we employ a meticulously controlled spray, directing liquid product into a cryogenically cooled freezing chamber. The ensuing frozen particles undergo freeze-drying within the dedicated module. To ensure rapid sublimation & prevent agglomeration, the drying chamber contents are simultaneously transported & heated.

The continuous spray-freeze-drying process initiates with bulk liquid product & concludes with the discharge of thoroughly dried particles, guaranteeing total containment from formulation to powder filling. This comprehensive containment enhances sterility assurance levels, a notable advantage over traditional freeze-drying, which often involves additional external material handling during filling. Post-drying, the uniform, dried spherical product offers versatility, accommodating various container types such as vials, syringes, & inhalation systems. This streamlined approach not only maintains process integrity but also facilitates ease of handling & diverse packaging options.

Advancing Excellence, Industry Progress, & Client Success.

Our commitment to continuous improvement ensures we consistently meet & exceed client expectations, delivering exceptional results.





We are the suppliers of
**High Quality Bespoke Spray Dryers, HVAC System
& Air Pollution System.**

(+91) 9769399147 | sales@pratik-enterprises.co.in

Lab/pilot scale trial facilities available for product development/R & D at our factory.

Pratik Enterprises is ISO 9001-2015 certified.

6H/6L/2, Bharat Coal Compound, Bail Bazar, Kurla(W), Mumbai-70, Maharashtra, India.