



Spray Dryer

Mini, Pilot & Production scale
1~25um & 1~100um diameter powder
Freezing spray dryer can process fruit juice
SD-15A to be able to process organic solvent

Catalogue of Laboratory/Pilot Spray Dryer

Environmental management system: ISO14001

Medical devices quality management system: ISO13485

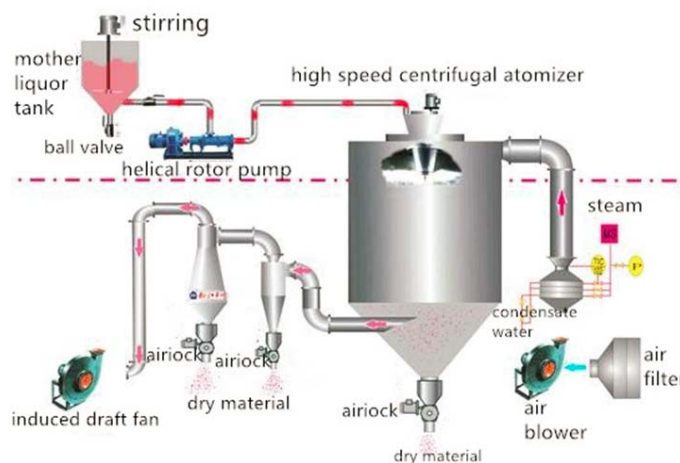
LABFREEZ INSTRUMENTS GROUP CO., LTD



An ISO9001:2008 certificate company

What is spray drying?

Spray drying is a process of drying water solution, emulsion and so on. It is widely used in Industrial Chemistry and food industry. Dry milk, detergents and dyes are only some of the products currently dried by spray dryer. Spray drying can be used to preserve food or only as a quick drying method with the advantages light weight and small volume.



Spray drying is usually a method of injecting a fluid mixture into the hot dry air for drying. The solvent usually is water-based; it is instantly volatilized by hot air. This evaporation process removes heat quickly so that the product is dried gently without being affected by heat. The product becomes powder, particle, or lump within seconds.

Applications



Spray Dry

SD-18A LAB Mini Spray Dryer

High specification electrical system

Maximum safety, stability and service life

Nozzle Imported from U.S.

Guarantee excellent spray effect

0.7mm Two-fluid nozzle, With auto needle block

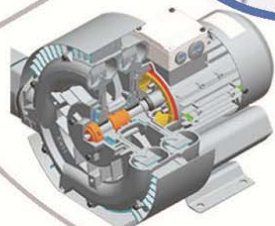


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Quick Release Design

Quick-disconnect design for power supply, thermometers air lines, etc. Allows you to easily handle operations



Siemens PLC

Highly automated design
Property Program control



Variable Frequency Fan

True frequency conversion design
Delta inverter, precise air volume control

Precision Peristaltic Pump

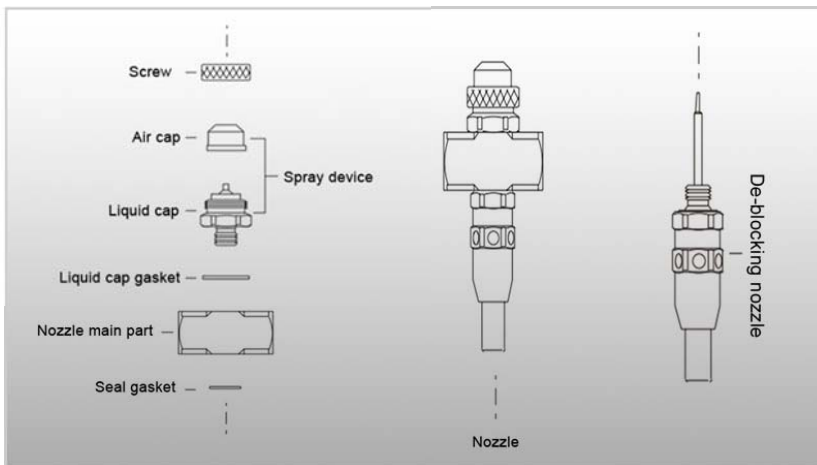
Accurate speed, durability design



SD-18A LAB Mini Spray Dryer

Atomization system: two-fluid atomizer and flow (imported parts)

- Professional designers surgeon design, patent application has been submitted
- Full body painting process
- Mechanical parts grinding secret agents, only the pursuit of perfection
- The American Spray double fluid nozzle is an excellent high precision spray nozzle. The instrument uses an external mixing nozzle, the air and liquid streams can be individually controlled to effectively spray highly viscous liquids and suspended abrasives.
- The double fluid nozzle is installed at the center of the top of the air distributor and sprays directly down into the tower. The feed enters at a minimum pressure through a tube inlet of the nozzle and is atomized with compressed air.



Spray shape

Meticulous & stable spray drying

spray nozzle imported from U.S.

Fan imported from Taiwan

Schneider & Siemens electric components

LCD touch display from Taiwan

Delicate design on appearance

Whole body spray painting process

Quick release design to let experiment in easy way

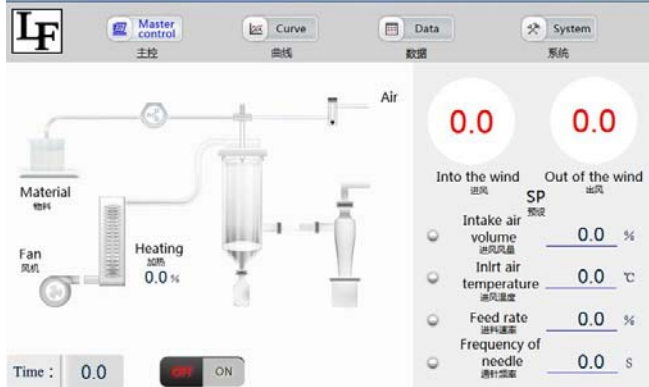
Siemens PLC

Fuzzy PID control, precise & humanity

Advanced Interface



Intelligent & humanity LCD interface
 Visual touch operation, animation demo process flow
 Inlet temperature, outlet temperature, frequency value, pricker frequency
 can be display and control
 Data logging, analysis, alarm and overload protection



Main interface



Curve interface



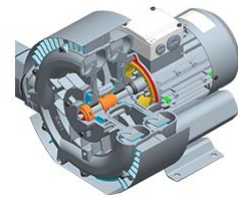
System interface

编号	时间	进料量	进温预设	进温测量	出风温度	进风量
16769	17:54:42	30.0	180.0	0.0	0.0	0.0
16768	17:54:41	30.0	180.0	0.0	0.0	0.0
16767	17:54:40	30.0	180.0	0.0	0.0	0.0
16766	17:54:40	30.0	180.0	0.0	0.0	0.0
16765	17:54:39	30.0	180.0	0.0	0.0	0.0
16764	17:54:37	30.0	180.0	0.0	0.0	0.0
16763	17:54:37	30.0	180.0	0.0	0.0	0.0
16762	17:54:36	30.0	180.0	0.0	0.0	0.0
16761	17:54:35	30.0	180.0	0.0	0.0	0.0
16760	17:54:34	30.0	180.0	0.0	0.0	0.0
16759	17:54:33	30.0	180.0	0.0	0.0	0.0
16758	17:54:31	30.0	180.0	0.0	0.0	0.0
16757	17:54:31	30.0	180.0	0.0	0.0	0.0
16756	17:54:29	30.0	180.0	0.0	0.0	0.0
16755	17:54:29	30.0	180.0	0.0	0.0	0.0
16754	17:54:27	30.0	180.0	0.0	0.0	0.0
16753	17:54:26	30.0	180.0	0.0	0.0	0.0
16752	17:54:25	30.0	180.0	0.0	0.0	0.0
16751	17:54:25	30.0	180.0	0.0	0.0	0.0
16750	17:54:23	30.0	180.0	0.0	0.0	0.0
16749	17:54:23	30.0	180.0	0.0	0.0	0.0
16748	17:54:21	30.0	180.0	0.0	0.0	0.0
16747	17:54:21	30.0	180.0	0.0	0.0	0.0

Data recorder

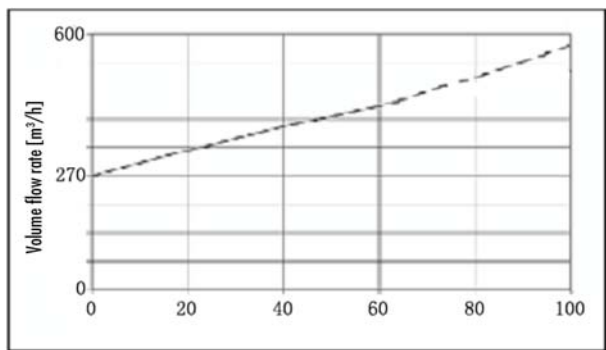
Real frequency converter fan

Frequency converter fan can be great help in particles forming, product yield and processing
 We use real frequency wind turbine design, Delta brand inverter

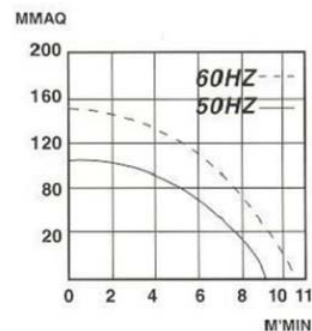


Air supply system

Medium pressure blower imported from Taiwan
 Fan is the internal mechanical structure of the rotor
 The air supply system of the instrument adopts frequency conversion control to realize the stepless adjustment of the air volume, so as to meet the requirements of different process spray drying experiments.

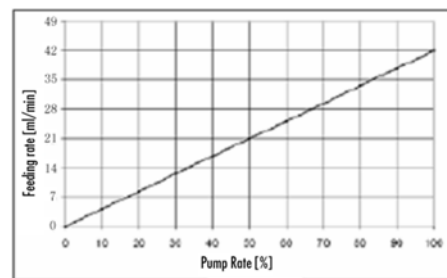


Air blower

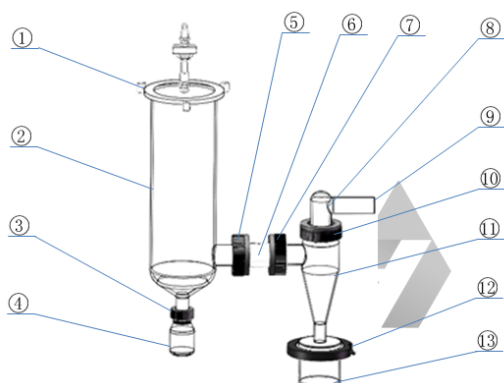


Peristaltic pump

The peristaltic pump can be adjusted for pipes with different inner diameters and outer diameters. The diameter of the pipe is different, and the absolute flow is different. This relationship of the standard 19# silicone hose is shown in the diagram.



3.3 high borosilicate glass



Schematic diagram of glass assembly

- | | |
|--|-----------------------------------|
| ①Drying tower body fixing claw | ②Drying tower |
| ③Small collection bottle screw connector | ④Small collection bottle |
| ⑤Flange screw connector | ⑥PTFE connector |
| ⑦Flange screw connector | ⑧Glass elbow |
| ⑨Tail gas exhaust vent | ⑩Flange screw connector |
| ⑪Cyclone separator | ⑫Material collection bottle clamp |
| ⑬Material collection bottle | |

Features

- SD-18A Mini spray dryer can obtain a good powder particle sample quickly and directly, and the particles are naturally spherical. It has the following remarkable performance characteristics:
- The instrument is exquisite and small, and the cabinet adopts humanized aesthetic design, and uses special spray painting technology to make the appearance of instrument more high-end;
- Heating pipes and auxiliary machinery parts are made of high strength stainless steel, high corrosion resistance and durability;
- High precision imported double fluid nozzle ensures accurate atomization performance;
- Loading and unloading is simple and fast, the operation is simple and efficient, and the whole spray drying process is carried out in the glassware, which is convenient for the operator to observe the whole experiment process;
- The control system of this equipment is based on the SIEMENS PLC and MHI touch screen. It is designed with the principle of energy saving and high efficiency making the temperature rise more quickly and stably. The temperature control accuracy is within 1°C;

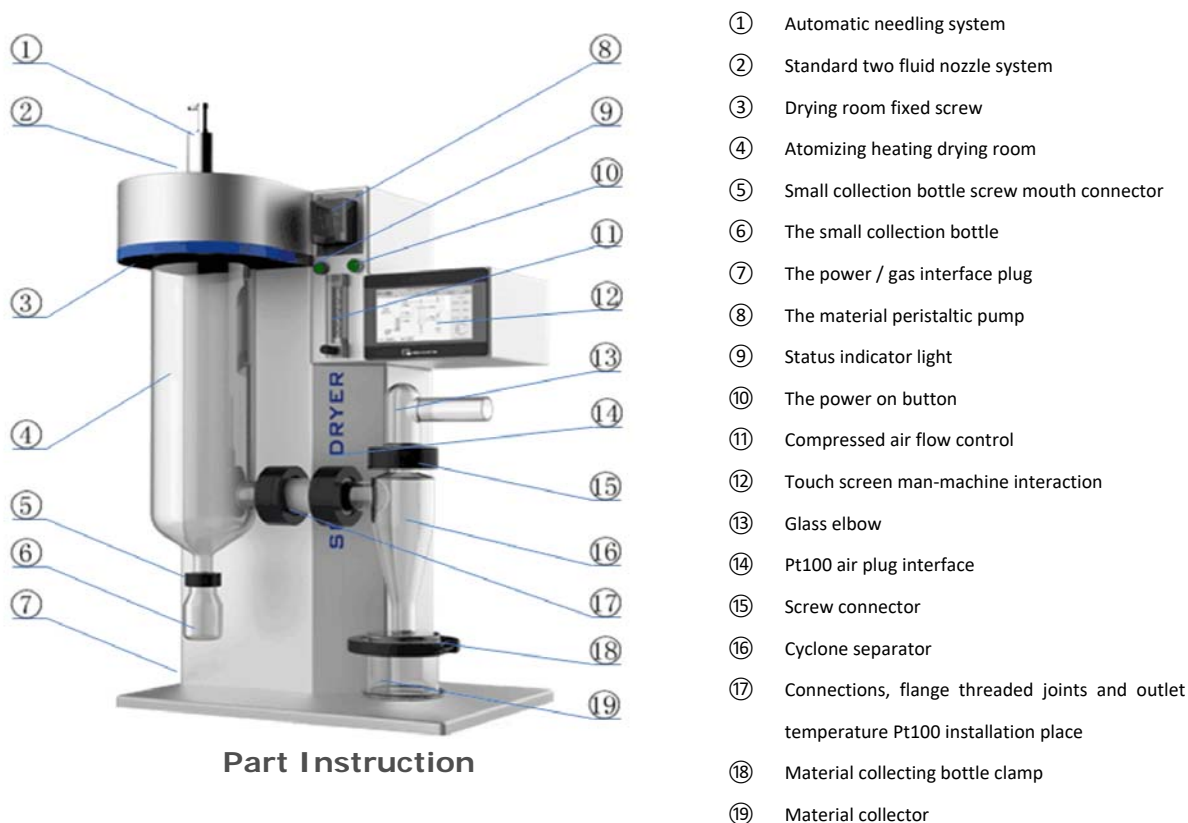
- With a user-friendly window for human computer interaction, customers can fully grasp the important elements such as air flow, inlet temperature and can observe the working state of the instrument in real time, So that customers will have more actual verification space in the spray drying experiment;
- Intelligent remote host computer operation monitoring system makes the user easily complete the spray drying work in the office before the computer.

Applicability of SD-18A

- SD-18A small spray drying apparatus can be used for drying aqueous solution and suspension. It is suitable for the experiment and production of uniform powder. Such as: pharmaceuticals, dyes, pigments, food and beverage, milk, egg products plants and vegetable products, heat sensitive materials, plastics, polymers, resins, ceramics, perfume, soap, detergent, blood, adhesives, oxides, textiles, bone, teeth etc.
- SD-18A is particularly applicable to the laboratory for liquid material directly into micro powder, without materials filtration, concentrating and crushing before drying, applicable for all solutions such as emulsion, suspension.

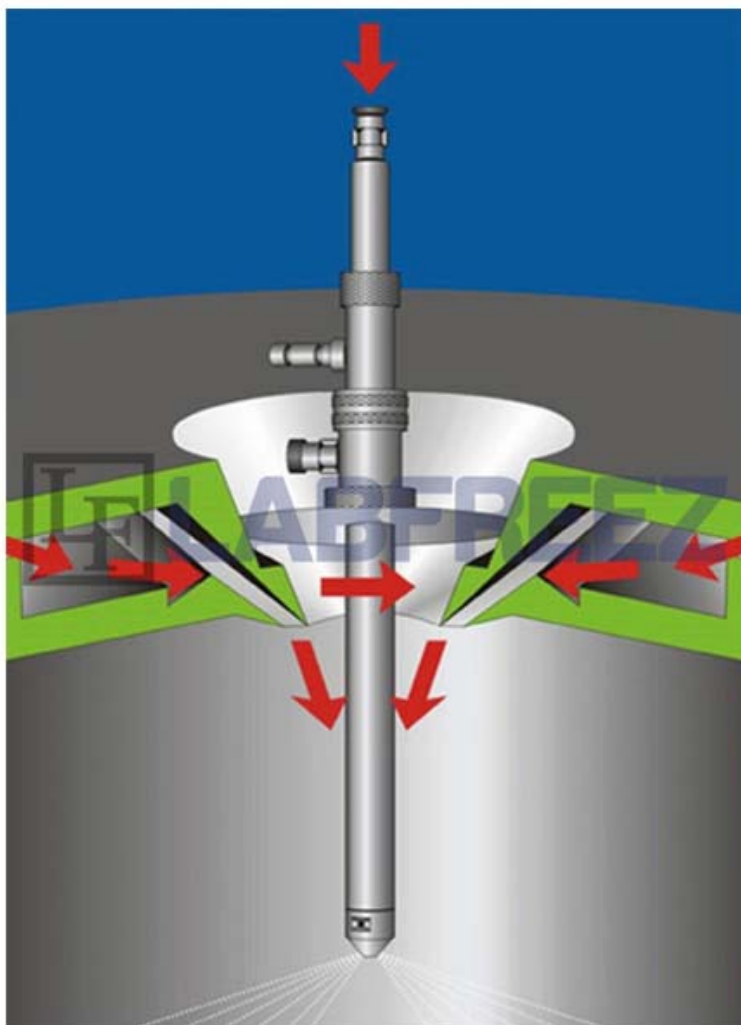


Cannot be used to deal with flammable, explosive or easy to produce large amounts of gas material. In particular, gases that are chemically unknown cannot be released.

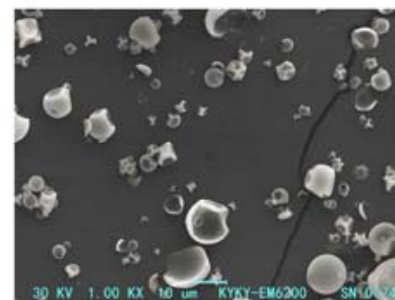
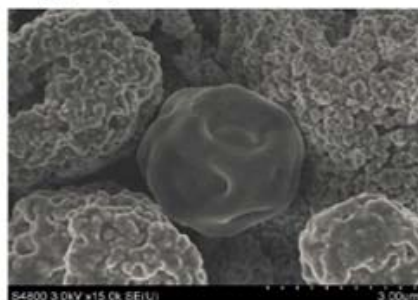


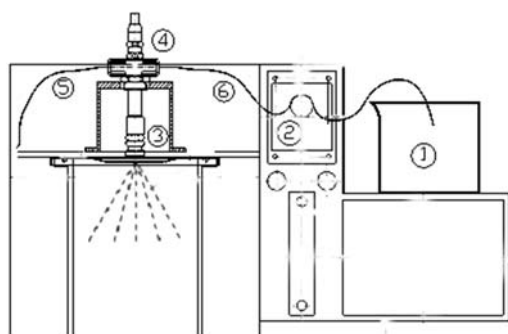
Dried products

High dried product getting rate



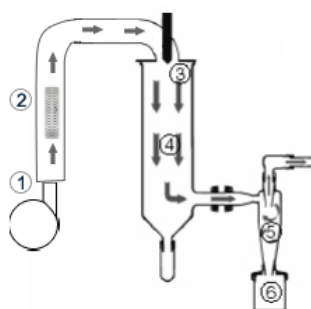
Scanning by Electric Microscope





Principle of sample feeding and dispersing

- ① Feed material
- ② Peristaltic pump
- ③ Two fluid nozzle
- ④ Automatic nozzle cleaning system
- ⑤ Compressed air line
- ⑥ Feed line



The functional principle of dry air

- ① Air inlet (Air supplied by fan)
- ② Heating pipes and electric heaters
- ③ Concentric inlet of hot air around nozzle
- ④ Spray cylinder
- ⑤ Used to separate particles from a gas stream
- ⑥ Product collection container

Specifications:

Max evaporator capacity	1800ml/h
Peristaltic pump feed rate	0 ~ 2000ml/h
Inlet air temperature	30 ~ 250°C ±1°C
Outlet air temperature	30 ~ 120°C ±1°C
Dry air flow rate	70m ³ /h (maximum 330m ³ /h) , pressure 686Pa
Blower	0.2KW/220v, frequency converter fan
Electric heater	3.2KW/220V, 2520 special stainless steel
Temperature sensor	PT-100, intelligent PID control, control accuracy±1°C
Spray system	Nozzles (U.S.), 0.7mm diameter, Two-fluid nozzle (inside mix)
Avg drying time	1.0 ~ 1.5s
Automatic block discharging device	Automatic needling function, frequency adjustable 1-60s
Control system	Siemens PLC, 7" color touch LCD display
Electrical standard	Schneider
Quick release	Temperature meter, air piping and power supply
Air compressor	0.25KW, Max gas production 4.2m ³ /H, work pressure 2-5bar
Product material	SS316, 3.3 borosilicate glass
Power supply	220/230V, 50 ~ 60Hz

Rate power	220V/3.6KW
Weight	58kg
Dimensions(H×W×D)	910mm×575mm×423mm

Material Used

Parts	Material Name
Glass assembly	3.3 high borosilicate glass
Nozzle/ heater	ANSI316
Sealing element	Teflon
Product feed pipe	silicon rubber
Exhaust pipe	polyurethane
Product	ANSI316

Standard Accessories

SD-18A spray dryer
User's Manual
One set of glass assembly
One meter silica gel tube
2 meters power cord with quick detachable head
2 meters compressed air pipe with quick detachable head
Pt100 temperature sensor with quick detachable head
Sealing ring of glass tower body
Air compressor

Why choose us ?

LABFREEZ® Lab Spray Dryer have been applied by over 1,500 domestic customers of top universities, enterprises and research institutes including AMSS Institute of Systems Science, Tsinghua University, Shanghai Jiao Tong University, South China University of Technology, Wuhan University, Tongrentang, Xiehe Pharmaceutical, Bright Dairy, Hong Kong Polytechnic University, Harbin Pharmaceutical Group, Strong Group, General Electric (GE) Shanghai R&D Center, Jiangnan University, China Agricultural University, Zhejiang University, Tongji University and Huazhong University of Science and Technology. With firm grasp of domestic market advantage, LABFREEZ® also vigorously expands overseas markets with equipment exported to the United States, Italy, South Korea, Singapore, Canada, Malaysia, Chile and Russia, receiving extensive praise in view of product quality.

How to find the model?

SD-15A lab spray dryer can be used for organic & water solvents

SD-1800F lab low temperature spray dryer can be used for thermo-sensitive materials and high carbohydrate compositions materials.

SD-2000 lab vacuum spray dryer can be used for probiotics, enzyme and other thermo-sensitive materials.

SD-3000F Lab spray freeze dryer is a new freeze dryer method which is faster than traditional freeze dryer.

SD-1000 laboratory spray granulator (fluidized bed granulation) can be used for granulation and coating.)

Customer site

