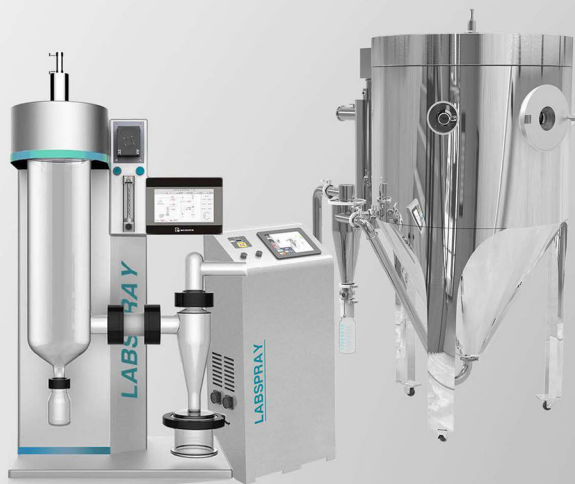


# LABSPRAY

# LABFREEZ®



## Laboratory Spray Dryer

Aqueous, Organic solvent, Heat sensitive material  
Making large particle, Granulation, Coating  
1.5kg~5kg per hour base on your requirements

**ΔΙΑ•Μ**  
Engineering Management

[www.dia-m.ru](http://www.dia-m.ru)  
RUSSIA 41-104

LABFREEZ INSTRUMENTS GROUP CO., LTD

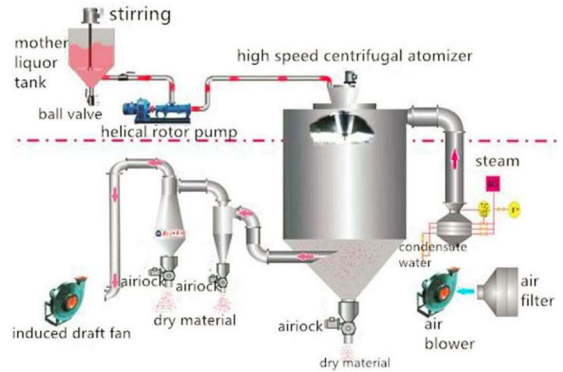
CE   
ISO9001:2015 ISO 14001 certificate company

## 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



Biology, chemical  
pharmaceutical  
industry

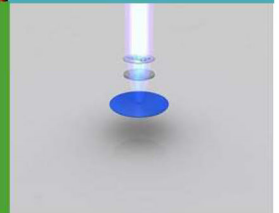


New materials  
science

Bioengineering  
industry



Chemical  
industry



# SD-18A BENCH-TOP MINI SPRAY DRYER

PILOT SPRAY DRYER

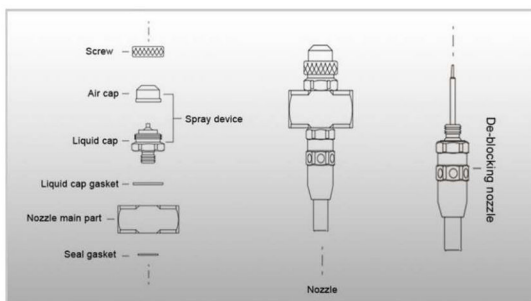


## METICULOUS & STABLE SPRAY DRYING

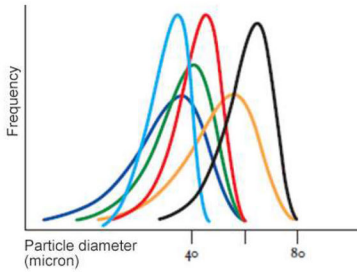
- U.S. spray brand Two fluid spray nozzle, SS316 material
- Deblock interval adjustable
- Power supply & Fan imported from Taiwan
- Siemens PLC & Schneider electric components
- LCD touch display from Taiwan
- 3.3 high borosilicate glass ensure safety working
- With USB interface to export data to computer
- ISO 9001 & ISO 14001 certificated

## ATOMIZATION SYSTEM: TWO-FLUID ATOMIZER AND FLOW

- Professional designers surgeon design, patent application has been submitted
- Full body painting process
- Mechanical parts grinding secret agents, only the pursuit of perfection
- 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.
- 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



## Particle size distribution

formed by different atomization methods under comparable conditions

- |   |   |
|---|---|
| <span style="color: blue;">■</span> Two-fluid spray nozzle, Parallel flow | <span style="color: orange;">■</span> Two-fluid spray nozzle, Fountain flow |
| <span style="color: green;">■</span> Rotary atomizer, Parallel flow       | <span style="color: black;">■</span> Pressure spray nozzle, Fountain flow   |
| <span style="color: red;">■</span> Pressure spray nozzle, parallel flow   | <span style="color: blue;">■</span> Combined nozzle                         |



### DELICATE DESIGN ON APPEARANCE

- Whole body high-end spray painting process which is beautiful, and easy to clean than normal stainless steel.
- Backup Pipes, seals is coming with machine.



### FAMOUS BRAND ELECTRIC ACCESSORIES

- Siemens brand PLC, Fuzzy PID control, precise & humanity
- Schneider electric parts and components



### 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



### REAL FREQUENCY CONVERTER FAN

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



### QUALITY AIR COMPRESSOR IS FITTED

- Silence oil free air compressor and pipes is comes with machine;
- Picture is as reference.



### QUICK RELEASE DESIGN

- Quick-connection design for power supply, thermometers air wire, air compressor gas pipe, allows you to handle easy.



### U.S. DWYER BRAND FLOW METER

- Fitted with U.S. Dwyer brand flow meter

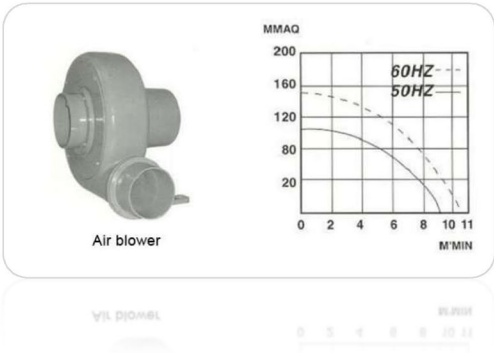
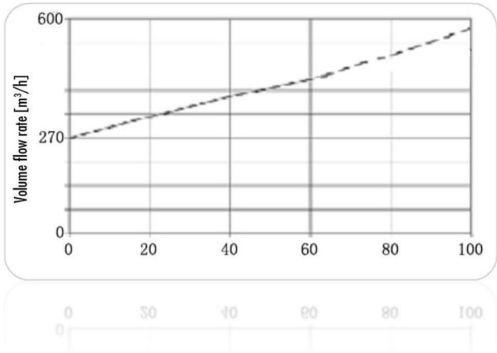


### USB INTERFACE

- Comes with USB interface, data to be exporting to computer easy.

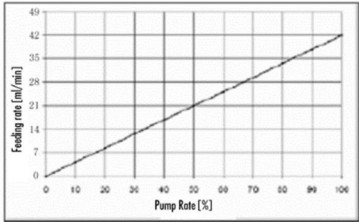
## AIR SUPPLY SYSTEM

- 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.

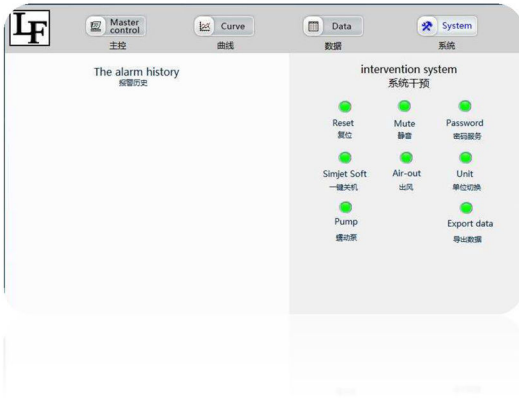
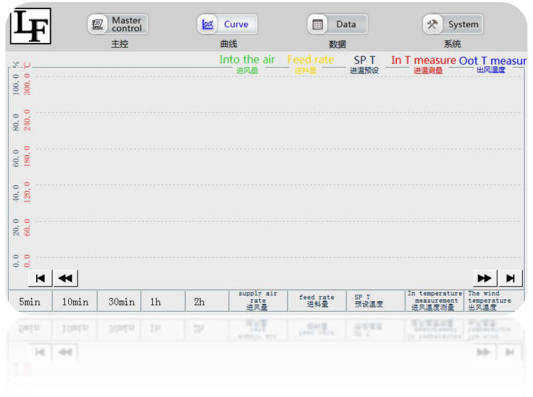
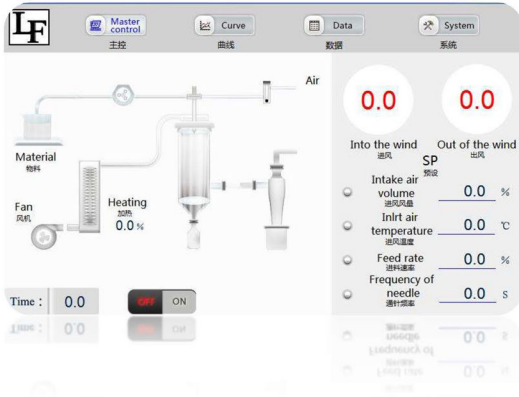


PERISTALTIC PUMP

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



CLEAR HUMAN INTERFACE





## 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 MINI SPRAY DRYER

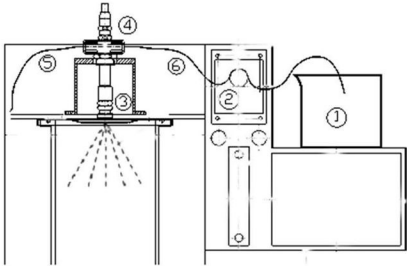
- SD-18A small spray drying apparatus can be used for drying aqueous solution and suspension. It is suitable for the experiment and production of uniform powder. Such as: pharmaceuticals, dyes, pigments, food and beverage, milk, egg products plants and vegetable products, heat sensitive materials, plastics, 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.*

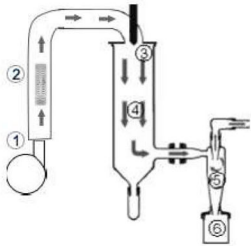
## STRUCTURE





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



Functional principle of dry air

- ⑦ Air inlet (Air supplied by fan)
- ⑧ Heating pipes and electric heaters
- ⑨ Concentric inlet of hot air around nozzle
- ⑩ Spray cylinder
- ⑪ Used to separate particles from a gas stream
- ⑫ Product collection container

PRODUCT COLLECTION



SPECIFICATIONS

MODEL	SD-18A MINI SPRAY DRYER
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	70m³/h (maximum 330m³/h)
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), 0.4mm/1.0mm optional
Particle size	1 ~ 25um
Avg drying time	1.0 ~ 1.5s
Automatic block 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 4.2m³/H, work pressure 2-5bar
Exhaust pipe	Diameter 51mm
Collection bottle	150ml & 450ml
Power supply	220/230V, 50 ~ 60Hz
Rate power	220V/3.6KW
Weight	58kg
Dimensions(H×W×D)	910mm×575mm×423mm

STANDARD ACCESSORIES

NO.	ITEM	QTY
1	SD-18A spray dryer host	1 set
2	Atomizer	1 set
3	Glass assembly	1 set
4	Silica gel tube	2 pcs
5	PU tube	1 pc
6	Teflon connector	1 pc
7	Power cord with quick release head	2 m
8	Compressed air pipe with quick release head	2 m
9	Pt100 temp. sensor with quick release head	1 set
10	Sealing ring of glass tower body	2 pcs
11	O-ring sealing	4 pcs
12	Clamp	1 pc
13	External air compressor	1 set
14	Installation tools	1 set
15	User's Manual	1 copy


MAIN SPARE PARTS

ITEM NAME	BRAND
Nozzle	U.S. spray system ANSI316
PLC	Siemens S7-200PLC
Touch screen	Taiwan MHI
Fan motor	Taiwan Delta Inverter fan
AC contactor	Schneider
Intermediate relay	Schneider
Air switch	CHINT
Button	Schneider
Socket	Aviation socket
Solid state relay	TWITEC

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 external	Quality steel with high quality spraying

OPTIONAL

No.	Name	Specification
SD18A016	spray nozzle	0.4mm (U.S. spray)
SD18A017	spray nozzle	1.0mm (U.S. spray)
SD18A018	Stainless Steel Bag Filter Collector	



OIL-FREE AIR COMPRESSOR (STANDARD FITTING FOR SPRAY DRYER)

- quality assurance. Obtained the ISO9001-2008 and ISO13485-2012 quality system certification of TUV in Germany.
- pure oil-free design. The output gas contains no oil molecules and is harmless to the human body.
- ultra-quiet. Low noise, smooth and non-fluctuating output pressure, reducing noise pollution.
- Multi-level filtration. Multi-stage gas filtration keeps the instrument cleaner and extends its life.
- internal spray rust. The inside of the gas tank is sprayed and finished to prevent the air from being rusted and contaminated.
- safe to use. Weakness, current causes the air compressor to overheat, can automatically stop the protection to avoid burnout.
- automatic start. Intermittent use, air compressor switch does not need to restart.
- pressure is adjustable. The air pressure can be adjusted to meet different equipment needs.
- durable. It is used according to regulations and has been used for more than 15,000 hours.
- Easy to operate. Power on and use without any training.
- maintenance is simple. No need to add lubricant, it is easy to use.



Voltage	220V/50 or 110V/60
Power (W)	550W/0.75HP
Max. flow (L/min)	115
Amount @7bar(L/min)	40
Noise dB(A)	58
Max. pressure (Bar)	8
Gas tank capacity (L)	22
Gross weight (KG)	25
Net weight (KG)	23
Size (L/W/H) mm	410*410*520

## 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.)

## Certificates



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