



# About **PILOTECH**

[www.shpilotech.com](http://www.shpilotech.com)



# Leader For **SPRAY DRYER**

Pilotech has been engaged in spray drying for nearly 20 years. Our products are exported to more than 60 countries. Now we already have over 3,500 users around the world.

## To be The **Leader for Spray Dryer** in the World – Pilotech

Pilotech started to produce laboratory spray dryer since 2005. We have over 50 patents and over 5 software copyrights.

Our company is also the only manufacturer in the world that can produce a wide range of spray dryers, including benchtop spray dryer, vacuum spray dryer, spray-freezing dryer, all-in-one machine for spray drying and fluidized granulator, organic solvent spray dryer and nano spray dryer.

Our laboratory spray dryer has many advantages, such as stable performance, easy operation and durable service. For this reason, the product is very popular among researchers. It has occupied more than 70% of the market in China. It is now used by more than 3,500 users in the world, and exported to more than 60 countries and regions, including USA, UK, Germany, Italy, Russia, South Korea, Singapore, Japan, Malaysia, Canada, Australia, South Africa, Taiwan and Hong Kong.



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# Pilotech JOURNEY

## **YC-015: The first lab two fluid spray dryer in China**

Our laboratory spray dryer is very small, but it solves many problems. For example, with our product, you don't need to face the problems like difficulty in preparing materials, large coverage, and big noise.

**2005**

## **YC-1800: The first lab low temperature spray dryer in China**

You don't need to worry that the materials containing sugar will stick on the wall when they are used for spray drying. You don't need to worry that the heat-sensitive materials, such as enzymic preparations, will degenerate when they are used for spray drying.

**2007**

## **YC-015A: The first inert loop spray dryer in China (for organic solvents)**

It can also ensure safe spray drying of organic solvent in laboratory. With our product, both toxic and oxidizable materials can be treated with spray drying in laboratory.

**2008**

## **YC-1000: The first lab spray granulator in China**

Only one machine can realize four functions, including spray drying, spray granulation, fluidized bed drying and fluidized bed coating.

**2009**

## **YC-2000: The first lab vacuum spray dryer in China**

It is a perfect combination of vacuum drying and spray drying. The heat sensitive materials such as probiotics can remain active after spray drying in laboratory.

**2010**

### **YC-3000: The first lab spray freeze dryer in China**

It is also a perfect combination of spray drying and freeze drying. Compared with freezer dryer, our spray dryer can provide a faster drying process, and the dried materials have better fluidity and solubility.

**2011**

**2012**

### **YC-018: The first pilot scale spray dryer, powder recovery rate can reach 92%**

Our spray dryer for pilot plant test is also very small. It only covers an area of 1 square meter, but it has the processing capacity of 3L/H. It has the advantages, such as low noise, low power (only 5.5KW), and high material recovery rate.

### **YC-500: benchtop spray dryer**

The processing capacity is 500ML/H. The minimum material volume is 30ML. Because it is very small, it can be placed on the workbench.

**2013**

**2014**

### **YC-501 and YC-018A: Inert loop spray dryer**

YC-501 is the smallest organic solvent spray dryer. It can be applied to spray drying of very tinny materials. YC-018A is organic solvent spray dryer for pilot plant test. It applies to the preparation of materials in laboratory and pilot plant.

### **YC-510: Vacuum spray dryer, which contains high temperature type, vacuum low temperature type or inert loop type (optional)**

YC-510 is a multifunctional device. It can be used as traditional laboratory spray dryer, vacuum spray dryer or organic solvent spray dryer (optional) to process different materials.

**2016**

**2017**

### **Developed a new concentric spray nozzle**

If the materials are atomized by traditional spray nozzle, they can be easily sprayed to the wall of bottle, because traditional spray nozzle may have some defects in installation or spraying accuracy. So we recommend the concentric spray nozzle. The concentric spray nozzle has better performance. Its spray will form an umbrella around the nozzle.



# The world leading R&D **SOLUTION FOR SPRAY DRYING**

- Famous brand for spray dryer in China
- 20 years continuous development
- Over 3,500 customers all over the world



## The Pilot Spray Dryer YC-019- innovative solutions for spray drying in the laboratory

The Pilot Spray Dryer YC-019 is the result of 20 years continuous development, is your choice for the quick and gentle drying to powder of liquid material. The impressive features of the spray dryer include its efficient performance with very short set-up times, an effective integrated nozzle cleaning mechanism and a high degree of flexibility thanks to the different cylinder geometries. The system was designed to be stand by a keyboard, conducted by a colorful crystal screen of touch guidance mode.



Pilot Scale Spray Dryer YC-019

The world leading R&D solution for spray drying

# CONTROLS & FUNCTIONALITY

YC-019 pilot spray dryer is designed to ensure that all functions are simple to select and adjust, to quickly achieve the optimum conditions for spray drying. The operator can control the following functions:

- Inlet Temperature
- Airflow Volume
- Pump Speed
- De-blocker Frequency
- Air compressor flow



## Easy to use

- PLC control, One-click boot
- Color Touch Screen, Fast setup and cleaning times
- Scale up to pilot or industrial scale possible
- Visible process due to glass assembly
- Adjustable particle size (1- 100 microns)



## Two Fluid Nozzle with SUS316L stainless steel

The stainless steel spray assembly consists of an inner tube for the liquid sample leading to a small diameter jet. An outer tube directs compressed air to the nozzle. All units are supplied with 2.0mm jets, other sizes are available as accessories. The spray assembly incorporates an automatic de-blocking device that prevents the jet nozzle from becoming blocked, the de-blocking needle is activated by an integral compressor. De-blocking is sometimes necessary with materials which may solidify or when large particles in suspension cause blockages in the jet.



# Flexible switch between small and high processing capacities

The minimum and maximum capacities of YC-019 pilot spray dryer are respectively 100ML and 5L/H. Being capable of continuous production, it is a perfect combination of minor, small and pilot scale.



## Perfect combination of low temperature and ultra-high temperature

With maximum inlet air temperature eaching 300 °C, it can meet ultra high temperature drying requirements of ceramics and other materials, with minimum inlet air temperature being 105 °C, it is especially suitable for spray drying of traditional Chinese medicine, extracts of natural substances and other materials with sugar content. No material will adhere to the wall during drying and materials are featured with excellent fluidity after drying.

## High recovery rate



With only one cyclone separator, recovery rate is always a problem with lab spray dryers and it is difficult to improve recovery even with two cyclones. With the structured redesigned, YC-019 can reach a maximum recovery rate of 92% excellently solving the problem of low recovery.



# Temperature protection

The heater has an extreme high temperature when experiment finished, which needs air blower to continue working in order to reduce the inside temperature and ensure the safety of equipment, YC-019 spray dryer can control air blower running automatically, even the operator wants to turn off the air blower, the system would prevent the operator until the temperature of system reduce to the default security state of system.

## Large particle processing ability



Size of particles dried with conventional lab spray dryers is generally 1-25 $\mu$ m, but they cannot meet requirements of processing of catalyst and other large particles. With YC-019, you can get particles with a maximum size of 100 $\mu$ m and it is the first choice for processing of catalyst and other large particles sizing 60-100 $\mu$ m.

### PRINCIPLE

- 1 A menu driven microprocessor controller allows the selection of inlet temperature, airflow, automatic de-blocker frequency and pump speed.
- 2 The self-priming peristaltic pump delivers the sample liquid from a container through a small diameter jet into the main chamber. At the same time an integral compressor pumps air into the outer tube of the jet which causes the liquid to emerge as a fine atomised spray into the drying chamber.
- 3 Heated air is blown through the main chamber evaporating the liquid content of the atomised spray. The solid particles of the material, which are normally in a free flowing state, are then separated from the exhaust air flow by a cyclone and collected in the sample collection bottle. The exhaust airflow is directed through a flexible 60 mm diameter hose direct to atmosphere or to an existing extraction system.





# SUS 304 stainless steel

Spray chamber, cyclone separator, collector are all made of SUS 304 stainless steel. It can work in a no-pollution and stable environment and sight glass equipped so the whole process can be inspected. All the spare parts are easy to install and clean.

## Trusted by the users

Over 1,500 domestic customers of top universities, enterprises and research institutes use our mini spray dryer. And exported to more than 60 countries & regions such as the United States, Italy, South Korea, Mexico, Singapore, Canada, Malaysia, Chile and Russia etc.



## Wide range of applications

YC-019 pilot Spray dryer can be used in a wide range of applications where the production of a free-flowing powder sample is required. This technique has successfully processed materials in the following areas: ↪

- Oxide • Blood • Polymers and Resins
- Beverages • Flavours & Colourings
- Milk & Egg Products • Plant & Vegetable Extracts
- Pharmaceuticals • Heat Sensitive Materials
- Plastics • Perfumes • Dyestuffs
- Ceramics & Advanced Materials
- Soaps & Detergents • Textiles
- Foodstuffs • Adhesives
- Bones, Teeth & Tooth Amalgam and many others



# Pilot spray dryer YC-019 technical data

Sr.no	Parameter	Pilotech YC-019 pilot spray dryer
1	Power	12KW
2	Voltage	380V; three-phase five-wire
3	Frequency	50-60 Hz
4	Compressed air	64L/min
5	Rated airflow	2m <sup>3</sup> /min
6	Air Inlet temperature	Max 300°C
7	Heater power	9KW
8	Temperature precision	±2°C
9	Nozzle type	Two fluid nozzle
10	Nozzle tip diameter	2.0mm standard/(0.5/0.8/1.0/1.5 available)
11	Possible particle size range	1-100µm
12	Max. Sample feed	5000ml/hr
13	Min. sample volume	100ml
14	Atomizer material	SUS 316 Stainless steel
15	Spray chamber material	SUS304 Stainless steel
16	Cyclone separator material	SUS304 Stainless steel
17	Receiving tank material	SUS304 Stainless steel
18	Body material	SUS304 Stainless steel
19	Seal of cyclone/cylinder	Silicone
20	Dimensions	1100*1000*1900mm
21	Deblocking	Automatic
22	Weight	230KG
23	Display	7-Inch LCD display for Heat, Spray, Pump, Air pressure, de-blocker frequency
24	Inert loop (for organic solvents)	Optional

\*This catalog is for reference only. Equipment upgrades may bring changes in parameters and structure. Therefore, this catalog does not serve as equipment acceptance proof. Thanks for your understanding.

# Contact Us



## Tel

0086-21-54243466 54243425 67899810



## Fax

0086-21-67899821



## Email

[sales@shpilotech.com](mailto:sales@shpilotech.com)



## Business address

1801, Pinggao Plaza No.88 Jiufeng Rd. Songjiang District,  
Shanghai, P.R.C 201600



## Factory address

No.77 Gangxing Rd. Songjiang District, Shanghai,P.R.C

