



Specialized in laboratory equipment

## YC-501 LABORATORY SCALE SPRAY DRYER

SHANGHAI PILOTECH INSTRUMENT & EQUIPMENT CO., LTD



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# The world leading R&D solution for Spray Drying

- Famous brand for spray dryer in China
- 15 years continuous development
- Over 1,500 customers all over the world



Mini Inert loop spray dryer YC-501  
Efficient and safe Spray Drying of aqueous and organic solutions

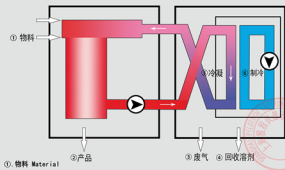


The Mini Spray Dryer  
YC-501 - innovative solutions for  
spray drying in the laboratory

The Mini Inert loop spray dryer YC-501 is the result of 15 years continuous development, is your choice for the quick and gentle drying to powder of aqueous and organic solutions. 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.

## PRINCIPLE

To safely spray dry inflammable solvents, a new operating principle is employed which uses a combination of the Spray Dryer YC-500 and the Inert Loop YC-501 to provide a closed loop circulation under inert conditions. The absence of oxygen prevents the formation of a ignitable mixture. At the same time, the solvent contained in the gas stream is cooled and consequently condensed. The regenerated flow is then returned again to the spray dryer.



## Safety

YC-501 Inert loop spray dryer features good safety and easy operations as it adopts closed cycle of nitrogen (or other inert gas), a safe gas, to keep the entire system in a closed state, and on-line monitoring of oxygen concentration such that the system would power off automatically and alarm when the oxygen concentration has reached 2.5% (which can be preset by the user as needed).

The combination of closed nitrogen cycle and full solvent recovery allows treatment of flammable and toxic solvents and drying of readily oxidizable material. In addition, the low boiling points of organic solvents allow low temperature drying of the material subject to heat denaturation.

### Solution to difficulty to dry organic solvents

While organic solvents are generally flammable and explosive, an explosion-proof, Inert loop spray dryer allows the materials to circulate in a closed drying system and prevents the organic solvent gas from coming in contact with the outside air, thus ensuring safe operations.

### Solution to difficulty to dry oxidizable material

Taking advantage of the antioxidant property of inert gas, this technology allows the materials to be dried and transmitted in an antioxidant environment in the closed circulation system isolated from oxygen, which ensures quality of the drying process for readily oxidizable material.

### Solution to toxic gases pollution from raw materials

While some materials or solvents may produce toxic gases when vaporized, a mini spray dryer with closed cycle of inert gas would keep these toxic gases in the closed system and allow them to be collected in subsequent processes, thus reducing environmental pollution, which is favorable for environmental protection.

The following solvents have been tested and can be used without reservation:

Methanol  
Ethanol  
Toluene  
Hexane  
Acetone  
Ethylacetate  
Dichloromethane\*

### Controls & Functionality

YC-501 mini 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
- Gasflow Volume
- Pump Speed
- De-blocker Frequency



### Easy to use

PLC automatic 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 – 25 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 0.7mm 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.



### Trusted by the users

Over 1,500 customers of top universities, enterprises and research institutes use our mini spray dryer. And exported to more than 40 countries & regions such as the United States, Italy, South Korea, Mexico, Singapore, Canada, Malaysia, Chile and Russia.



### Areas of application

YC-501 mini 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:

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

## Mini spray dryer YC-501 technical data

Sr.No.	Parameter	Pilotech YC-501 Inert Loop Spray Dryer
1	Power	2500W
2	Voltage	220V,50-60Hz
3	Min. Outlet Temperature	40° C
4	Capacity	500ml/h
5	Airflow	0-330 m <sup>3</sup> /h
6	Max. Inlet temperature	200° C
7	Heater power	1500W
8	Temperature precision	±1° C
9	Nozzle jet	0.7mm standard/(0.5/1.0/1.5/2.0mm available)
10	Nozzle type	Two fluid nozzle
11	Possible particle size range	1-25µm
12	Mean Residence time	1.0-1.5 sec
13	Operation mode	Automatic/Manual
14	Minimum sample volume	50ml
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	Gas type	N <sub>2</sub> (for solvent) or compressed air (for aqueous)
21	Dimensions	800*600*900 (SPRAY DRYER) 900*700*900 (THE INERT LOOP)
22	Display	7-Inch LCD display for Heat, Spray, Pump, Air pressure, de-blocker frequency
23	Thermal protection	Blower does not stop until temp <90° C
24	Deblocking	Automatic
25	Inert loop (for solvents)	Yes



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