

Spray Dryers | Large Capacity

DL411C

Evaporated water capacity 3000mL/h

Temp. adjustment range 0~300°C

Liquid sending pump flow rate range 0~70mL/min

Brand-new upgraded large spray dryer that efficiently recovers 100µm micro-particles.



Features

This device can obtain 40~100µm micro-particles, which are considered very difficult to obtain on laboratory spray dryer devices.

Purposes of this device: It can be used in production preparatory experiments, high-value sample experiments, capsule spray drying method application research, and as an alternative method to traditional drying methods in general laboratories.

- It adopts a high-efficiency two-fluid nozzle spray method and a large drying chamber, compared with other products, the sample adhesion amount in the DL411C drying chamber is less, and the drying chamber is designed with a special cold air inlet to effectively prevent spray particles from refluxing and adhering upwards.
- The large hard glass drying chamber is very convenient for observing the spray and particles status.
- The nozzle head can automatically perform pulse cleaning at set intervals.
- The wide range of temperature settings for the hot air inlet can improve processing capacity and experimental efficiency.

Specifications

Model		DL411C	
Applicable samples		Water-soluble & organic solvent (when connected to an organic solvent recovery device)	
Performance	Moisture evaporation capacity	Max. 3000mL/h	
	Spray method	Two-fluid nozzle method (sieve aperture 0.7mm), three-fluid nozzle method (optional)	
	Spray and hot air contact method	Vertical downward spray and flow method	
	Liquid feed pump	Adjustable from 0 to 70 mL/min	
	Temp. regulator setting range	0~300°C (inlet temperature), 0~100°C (outlet temperature)	
	Temp. adjusting accuracy	±1°C	
	Drying air volume adjustment range	0.13~1.0m ³ /min	
	Spray air flow adjustment range	0~30L/min	
	Spray pressure usage range	0.5~0.6Mpa	
Composition	Drying chamber	Size	Internal diameter 457×height 975 mm (glass part)
		Material	The drying chamber, cyclone unit, and product container are made of ultra-hard glass; other piping materials are stainless steel and silicone
	External output	Inlet temperature, outlet temperature output (4~20mA)	
	Temp. regulator	Multi-PID control	
	Touch screen	Temperature regulation, blower, heater, liquid delivery pump, pulse jet switch, automatic needle cleaning, alarm display, and operational curve	
	Control switch	Inlet temperature, outlet temperature control switch	
	Temp. sensor	PT100 thermistor	
	Heater	2.0kW×2	
	Spray air pump	Spray air compressor (sold separately) or built-in air compressor of organic solvent recovery device (sold separately)	
	Service socket	For stirrer: 200-230V~1A	
	Suction blower	Brushless blower	
	Filters	Suction filter, exhaust filter	
	Solvent recovery	Using solvent recovery device GAS510C (sold separately)	
	Spray nozzle cooling structure	Joints×2, OD Φ10.5mm (connected to a chiller)	
Spray air connection	Joint outer diameter, Φ7mm		
Exhaust connection caliber	Φ50mm		
Safety functions		Overheating at inlet and outlet temperature, liquid delivery pump reverse function, overcurrent leakage protection switch, independent overheating preventer for the outside of the heater	
Specifications	External dimensions	W1080×D850×H1770mm	
	Weight	Approx. 180kg	
	Power supply	200-230V~50/60Hz 23-27A	
Accessories		See Accessory list for details	

The large size of the drying chamber allows the equipment to provide sufficient time for drying fine particles, thus enabling the production of particles ranging 40~100 µm, similar to products manufactured in industries such as ceramics and pharmaceuticals.

- 7-inch ultra-large touch screen with options for Chinese/Japanese/English, easy and convenient to operate.
- The cover of the drying chamber can be raised and rotated, facilitating easy cleaning.
- The system is equipped with a new automatic nozzle featuring a cooling mechanism.
- Both two-fluid and three-fluid nozzles can be used.
- Experimental data recording and storage can be realized.
- Remote control is possible (optional function).
- Temperature zoning control is adopted, heating up faster and more stable.
- A service socket is provided for easy power supply to the stirrer.

Configuration



The cyclone separation unit is equipped with a safety cover to prevent burns and an anti-static brush.

Filtering device

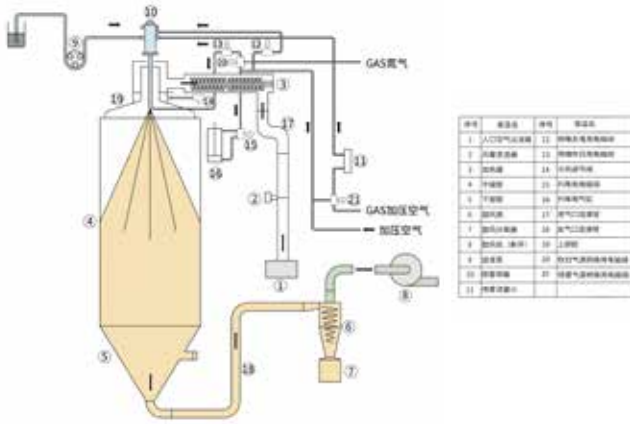


When installed at the air inlet, it effectively filters out particulate impurities from the incoming air, preventing contamination of the spray sample.
When installed at the exhaust port, it can effectively filter uncollected sample matter for secondary recovery purposes.

- 1 Sterilizers
- 2 Granulation and Spray Dryers
- 3 Furnaces
- 4 Ovens
- 5 Incubators
- 6 Plasma Equipment
- 7 Water Purifiers
- 8 Baths
- 9 Water Circulators
- 10 Rotary Evaporators
- 11 Stirrers & Shakers
- 12 Options

CE Certification

System diagram



Application cases

① Powder & Particle

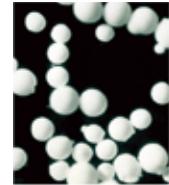
Through granulation and spheroidization processing, the flowability of powders is significantly enhanced, allowing for uniform filling during compaction. For this purpose, it is used in aluminum, zirconium, various ceramics, precious metals, super hard alloys, etc.

② Microencapsulation

Mixing and adjusting core substances and membrane materials during spray drying results in encapsulated powder from the primary solution.

[Application Case]

- Ink powder for carbonless copy paper
- Flavor adjustment for pharmaceuticals, adjusting solubility time
- Microencapsulation of fragrances for pharmaceuticals or hygiene-related products
- Microencapsulation of other pigments, fertilizers, oils, adhesives, etc.



0 50 100µm

Powder generated by DL411C

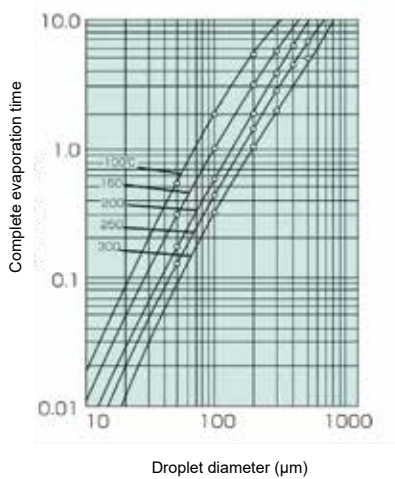
③ Spray cooling granulation

Wax, oils, fatty acids, etc. which are difficult to dry and powdered.

④ Special application cases

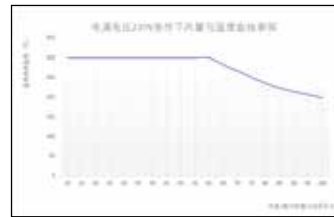
Spray concentration, spray reaction, powder granulation, etc.

Drying time



Drying time for complete evaporation of droplets at various hot air temperatures

Airflow and temperature usage curves

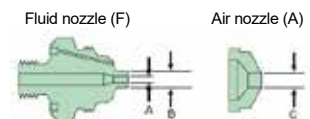


Control panel



Spray nozzle

Code	Nozzle size		Nozzle specifications	Applicable models
A080999031	Fluid cap PF2850-SS	Aperture A=0.711mm Aperture B=1.270mm	3	ADL312SC/GB211C/DL411C/DL410 (Standard) ADL311(S)/GB210
A080999040	Air cap PA64-SS	Aperture C=1.626mm		
A080999031	Fluid cap PF2850-SS	Aperture A=0.711mm Aperture B=1.270mm	2	ADL311(S)/ADL312SC/GB210/ GB211C/ DL410/DL411C
A080999029	Air cap PA-70-SS	Aperture C=1.778mm		
A080999034	Fluid cap PF40100-SS	Aperture A=1.016mm Aperture B=2.540mm	6	ADL312SC/GB211C/DL410/DL411C
A080999035	Air cap PA120-SS	Aperture C=3.048mm		
A080999049	Fluid cap PF60100-SS	Aperture A=1.524mm Aperture B=2.540mm	4	ADL312SC/GB211C/DL410/DL411C
A080999035	Air cap PA120-SS	Aperture C=3.048mm		
A080999039	Fluid cap PF100150-SS	Aperture A=2.530mm Aperture B=3.810mm	5	DL410/DL411C
A080999041	Air cap PA180-SS	Aperture C=4.572mm		



Sterilizers	1
Granulation and Spray Dryers	2
Furnaces	3
Ovens	4
Incubators	5
Plasma Equipment	6
Water Purifiers	7
Baths	8
Water Circulators	9
Rotary Evaporators	10
Stirrers & Shakers	11
Options	12