

Spray Dryers | Large Capacity

DL411C

Evaporated water capacity 3000ml/h

Temp. adjustment range 40~300°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 10~100µm 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 GAS510C)		
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	Inlet temperature ±1°C	
	Drying air volume adjustment range	0.12~1.0 m ³ /min	
	Spray air flow adjustment range	0~30L/min	
	Spray pressure usage range	0.3~0.6Mpa	
	Composition	Drying chamber	Size
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		Using a spray air compressor (sold separately) or connecting to an organic solvent recovery device GAS510C (sold separately) employs the built-in air compressor of GAS510C	
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		It can connect CF312L-B: connector ×2, outer diameter Φ10.5mm	
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 10~100 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

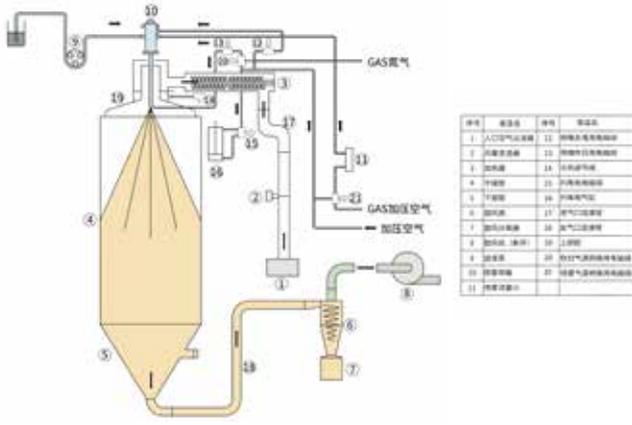


When installed at the air inlet, it effectively filters out particulate impurities from the incoming air, preventing contamination of the spray sample.
When installed at the exhaust port, it can effectively filter uncollected sample matter for secondary recovery purposes.

- 1 Sterilizers
- 2 Granulation and Spray Dryers
- 3 Muffle Furnaces
- 4 Ovens
- 5 Incubators
- 6 Plasma Equipment
- 7 Water Purifiers
- 8 Baths
- 9 Water Circulators
- 10 Rotary Evaporators
- 11 Freeze Dryers & Cold Traps
- 12 Stirrers & Shakers
- 13 Washers
- 14 Analysis and Test Devices
- 15 Options

CE Certification

System diagram



Application cases

① Powder & Particle

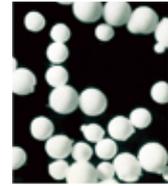
Through granulation and spheroidization processing, the flowability of powders is significantly enhanced, allowing for uniform filling during compaction. For this purpose, it is used in aluminum, zirconium, various ceramics, precious metals, super hard alloys, etc.

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 DL410

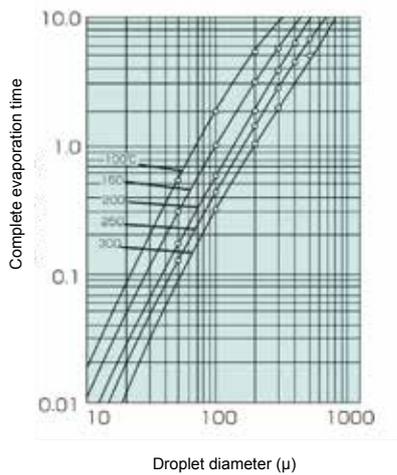
③ Spray Cooling Granulation

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

④ Special Application Cases

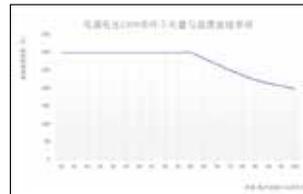
Spray concentration, spray reaction, powder granulation, etc.

Drying time

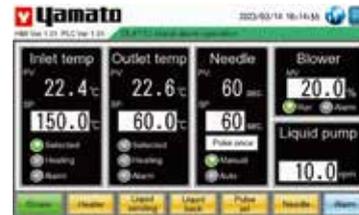


Drying time for complete evaporation of droplets at various hot air temperatures

Airflow and temperature usage curves

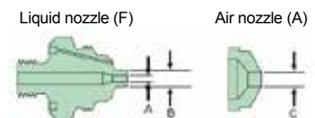


Control panel



Spray nozzle

Code	Nozzle size	Nozzle specifications	Applicable models
281298	Liquid cap PF2050-SS	Aperture A = 0.508mm Aperture B = 1.270mm	1 ADL311(S)/GB210-A
	Air cap PA64-SS	Aperture C = 1.626mm	
281290	Liquid cap PF2050-SS	Aperture A = 0.508mm Aperture B = 1.270mm	2A ADL311(S)/GB210-A
	Air cap PA70-SS	Aperture C = 1.778mm	
281292	Liquid cap PF2850-SS	Aperture A = 711µm Aperture B = 1270µm	3 ADL312SC/GB211C/DL411C/DL410 (standard) ADL311(S)/GB210-A
	Air cap PA64-SS	Aperture C = 1626µm	
281291	Liquid cap PF2850-SS	Aperture A = 711µm Aperture B = 1270µm	2 ADL311(S)/ADL312SC/GB210-A/GB211C/ DL410/DL411C
	Air cap PA-70-SS	Aperture C = 1778µm	
A080999034	Liquid cap PF40100-SS	Aperture A = 1016µm Aperture B = 2540µm	6 DL410/DL411C
A080999035	Air cap PA120-SS	Aperture C = 3048µm	
A080999049	Liquid cap PF60100-SS	Aperture A = 1524µm Aperture B = 2540µm	4 DL410/DL411C
A080999035	Air cap PA120-SS	Aperture C = 3048µm	
A080999039	Liquid cap PF100150-SS	Aperture A = 2500µm Aperture B = 3810µm	5 DL410/DL411C
A080999041	Air cap PA180-SS	Aperture C = 4572µm	



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