

## Spray Dryer Purvis Mini Spray

### GB210-A

Evaporated water	Temp. adjustment range	Sample flow
Max. 1,300 mL/h	40 to 220deg.C	Variable up to 26 L/min.
Spray nozzle (selectable)	Power supply	
For liquid/gas	AC200V to 240V	

**Drying of ultra small sample with its solid content of only about 0.5g is possible. Supports spray drying of fine powder of 1 $\mu$ m. \* (When optional mini cyclone is used.)**



**This product is a compact spray dryer that can produce powder easily at a laboratory scale using a spray drying system. It is useful for variety of applications from preliminary experiment at a pilot plant to drying work at general laboratories. It also features multiple power sources from AC200V, AC220V, and AC240V.**

- Because this product applies heat on fine grain sample instantly and does not apply high temperature on dry fine powder sample itself, samples unstable to heat can be reliably changed into even fine powder.
- Prepared fine powder will not be oxidized and contains minimum water and is contamination-free.
- Drying is made directly from solution or suspension liquid sample into fine powder,

which does not need pre- or post processes such as filtration, separation, or pulverization necessary in the conventional drying method and can be used without concern of contamination during a series of operations.

- Processing of samples that contain organic solvents is possible by connecting a separate solvent recovery unit GAS410.
- This unit can also be used as a fluid bed drying granulator by installing a separate mini bed attachment GF200.
- An automatic lift is equipped as standard to enable easy installation or removal of a dry air flow meter (voltage type) or attachments.
- A service outlet (max. 2A) and a sample stand are equipped as standard for connecting a magnetic mixer for stirring suspended liquid sample.
- Employment of a unique peristaltic pump, nozzle cooling mechanism, pulse jet mechanism, and a nozzle knocker realize stable spray drying.
- Global product lineup with multi-language multiple power supply and touch panels in Japanese, English, and Chinese.

## ■ Specifications

Product code		212777
Model		GB210-A
Performance	Temp. adjusting unit setting range	40 to 220deg.C (inlet temperature), 0 to 60deg.C (outlet temperature)
	Temperature adjusting accuracy	Inlet temperature±1 deg.C
	Drying air amount adjusting range	0 to 0.7 m3/min
	Spray air pressure adjusting range	0 to 0.3 MPa
	Liquid sending pump flow rate range	0 to 26 mL/min
Configuration	Spray air line washing function	Spraying at the nozzle tip, manual pulse jet system
	External output	Inlet temperature, outlet temperature, temperature outlet (4-20 mA)
	Automatic lift	Moving up/down of glass chamber automatic lift
	Temperature adjusting device	PID digital temperature adjusting device
	Touch panel	Blower, heater, liquid sending pump, pulse jet switch, error display
	Control select switch	Inlet temperature, output temperature control switch (outlet temp. control is conditional)
	Temperature sensor	K-thermocouple
	Heater	2.0 kW (at 200V) to 2.88 kW (at 240V)
	Liquid sending pump	Fixed amount peristaltic pump
	Spraying air pump	Spraying air compressor (sold separately) is used.
	Service outlet	For stirrer: AC100V, Max. 2A
	Suction blower	Bypass blower, brushless DC motor
	Filter	Suction filter, exhaust filter
	Recovery of solvent	Solvent recovery unit GAS410 (sold separately) is used.
	Spray nozzle cooling mechanism	Connector: nipple x 2, O.D.:φ10.5 mm
	Spray air connection diameter	Nipple diameter:φ7 mm
	Exhaust connecting diameter	φ50 mm
Safety function		Inlet/outlet temperature overheat, sample feed reverse rotation mechanism, over current electric leakage breaker, nozzle connection error
Standards	External size	W760 x D420 x H1,350 mm
	Weight	110 kg
	Power supply (50/60Hz) rated current	AC200V 16A (20A) (AC220V 17A, AC240V 18A *Switching of terminals necessary)
Accessories		Silicon tube (with a stopper) x 3, tiron tube (with a stopper) x 2, exhaust duct (with one hose band) x 1, outlet temperature sensor, spray air tube, sample box, static electricity removal earth, Tetlon braided hose 5m (with two hose bands), a container table

### ■ Control panel



Inlet temperature, outlet temperature, and drying air amount are digitally displayed. Setting is made on the touch panel that allows operation settings, operation status display as well as error display, and settings of various operation conditions also in English and Chinese in addition to Japanese.

Product code	212776
<b>Mini spray attachment</b>	<b>GF300</b>
Evaporated water amount	MAX1300mL/h
Sample for drying	Suspended solution, emulsion
Ultra hard glass	Cyclone, drying chamber, product container

### ■ Model GAS410

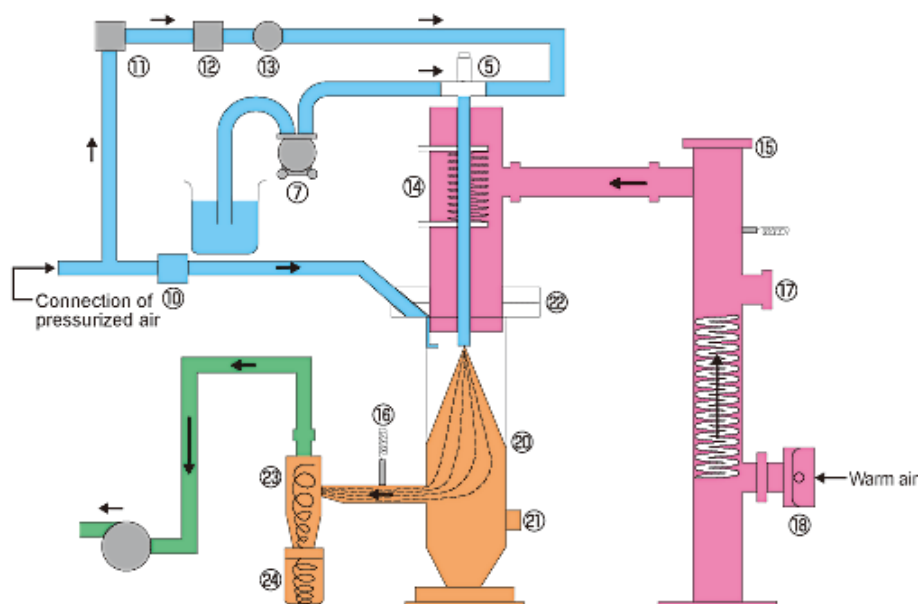


### ■ Operability



Employment of one touch removal system has made removal or cleaning of the drying chamber, the cyclone, or the product container further easier.

### ■ System diagram

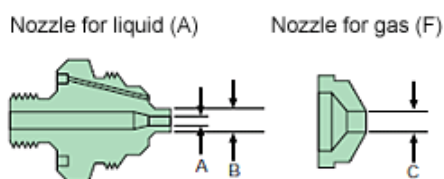


No.	Part name	No.	Part name
(1)	Heater	(16)	Outlet temperature sensor
(5)	Spray nozzle	(17)	Blind
(7)	Liquid sending pump	(18)	Suction port, suction filter
(8)	Blower	(19)	Nozzle cooling connection port
(10)	Solenoid valve	(20)	Drying chamber
(11)	3-way solenoid valve	(21)	Cap
(12)	Needle valve	(22)	Distributor
(13)	Pressure meter	(23)	Cyclone
(15)	Inlet temperature sensor	(24)	Product collecting container

### ■ Spray nozzle



The tip of the nozzle comprises of a nozzle for liquid and a nozzle for gas.



Product code	Model	Nozzle No.	Size (µm)
281297	1A (standard)	(F) 1650	A 406 B 1270
		(A) 64	C 1626
281298	1	(F) 2050	A 508 B 1270
		(A) 64	C 1626
281290	2A	(F) 2050	A 508 B 1270
		(A) 70	C 1778
281291	2	(F) 2850	A 711 B 1270
		(A) 70	C 1778
281292	3	(F) 2850	A 711 B 1270
		(A) 64	C 1626

### ■ Applications



- Food and medicinal products Powder milk, egg yolk, soy sauce, coffee, starch, protein, hormone, serum, antibiotics, enzymes, fragrant materials, essences, etc.
- Organic chemistry Wax, dye, cleaning agent, surface acting agent, agricultural chemical, antiseptic agent, synthesized resin, pigments, etc.
- Inorganic chemistry Ferrite, ceramics, photocopy toner, magnetic tape materials, photosensitive materials, various industrial chemicals, waste fluid of samples, etc.

### ■ Repeatability of spray drying test

Test No.	Sample name	Sample density (%)	Drying conditions							Yield (g)	Recovery rat (%)
			Inlet temp. (deg.C)	Outlet temp. (deg.C)	Dry air amount (m3/min)	Spray air pressure KPa (kg/cm2)	Test sample amount (g)	Sent amount of sample liquid (g/min)	Test tim (min)		
1	Coffee solution	5	150	80	0.45	147(1.5)	198	6.6	30	8.1	81.8
2	Coffee solution	5	150	80	0.45	147(1.5)	198.7	6.6	30	8.1	81.5
3	Coffee solution	5	150	80	0.45	147(1.5)	200.6	6.7	30	8	79.8
4	Coffee solution	5	150	80	0.45	147(1.5)	198.1	6.6	30	8.2	82.8
5	Coffee solution	5	150	80	0.45	147(1.5)	199.3	6.6	30	8.4	84.3

**■ Optional parts**

Product name	Product code
Fine grain sample collecting cyclone	212780
Safety cover	212787
* Inlet/outlet temperature recorder (3-dot)	212792
Static removal brush set	212788
Viton packing for cyclone inlet/outlet (1 set of 2 types)	212781
Teflon packing for cyclone inlet/outlet (1 set of 2 types)	212782
Regulator	212789
Supply air filter box (for 0.3 micro meter collection)	212791

Note : The item marked " \* " in the column of "Remark" shall be ordered together with the main unit.