



Freeze-Drying From Lab To Production Line



XI'AN TOPTION INSTRUMENT CO.,LTD

Add:GaoXin District, XI'AN CHINA

Tel:0086-29-88763980

Fax:0086-29-88990306-8006

Email:info@toptionlab.com

Web:www.toptionlab.com



**Total Solution Provider  
Of Vacuum Freeze  
Drying Equipment**

Xi'an TOPTION INSTRUMENT CO.,LTD



## About Us

TOPTION INSTRUMENT has spent 18+ years becoming a world leading manufacturer engaged in the research, development, production, sale and service of drying equipment.

The headquarter is in Xi'an City, the ancient capital with 5000+ history; includes several production bases, own professional research and development team 25+ persons; the distillation production base is located in Xi'an, covering an area of 4040 m<sup>2</sup>; the drying and other production bases are located in southern China cities.

Since 2004 TOPTION'S equipment has been used and praised in many counties including United States, Canada, Poland, Spain, Italy, Sweden, Switzerland, Germany, France & Colombia. We are your dependable partner in drying industry, we are flexible, intelligent, and truly care about your benefits potential. We want your business to be remembered and welcomed by your customers.

TOPTION has passed ISO9001 & CE certification. We work closely with our clients to deliver a successful and extraordinary drying equipment, choose TOPTION to maximize your benefits.

TOPTION will be your TOP OPTION.



## CONTENTS

### Lab vacuum freeze dryer



- ◆ TOPT-10/12/18 Series of freeze-dryer
- ◆ TOPT-18T-24 Series of freeze-dryer
- ◆ TOPT-12S /18S Heating in-situ freeze dryer

### Pilot freeze drying equipment



- ◆ TPV-10FD/30FD/50FD Electric-heating freeze dryer
- ◆ TPV-20F/30F/50F/100F Silicone oil heating freeze dryer
- ◆ TPV-200F/300F Silicon oil heating freeze dryer
- ◆ TPV-20FQ/30FQ/50FQ/100FQ/200FQ GMP freeze dryer

### Industry freeze drying system



- ◆ GZLY suitable for medical and pharmaceutical vacuum freeze dryer
- ◆ GZL series vacuum freeze dryer
- ◆ Customizable CIP and SIP system

LAB SOLUTION PROVIDER





## Lab vacuum freeze dryer

Vacuum freeze-dryers are widely used in medicine, pharmaceuticals, biology, chemistry, and food. They preserve items for long-term storage, allowing them to be rehydrated while maintaining their original properties.



Small samples can be pre-frozen directly inside the cold trap, suitable for laboratory use, meeting most routine freeze-drying needs. Suitable for freeze-drying liquids, pastes, and solids, among other substances.

- ◆ Typically used for laboratory and small-scale production. ◆ Has a smaller processing capacity.
- ◆ Usually compact and suitable for small laboratories. ◆ Used for quickly processing small batches of samples or products.
- ◆ Provides high temperature and pressure control, suitable for research and development work.

## TOPT-10/12/18 Series of freeze-dryer

TOPT-10/12/18 freeze dryers, small amount of samples can pre-freeze in condenser. They are suitable for lab use or small-scale production, and they can meet requirements for most laboratories.



### Your benefits:

1. Imported compressor, CFC Free refrigeration.
2. Big opening of condenser, condenser has pre-freeze function.
3. The machine can store freeze-dried data for many times, experimental data can be output by a USB flash disk.
4. Touch screen as human-computer interface, Chinese (English) convertible interface, display drying curve.
5. Small volume, compact structure, easy and convenient operation.
6. The international standard KF vacuum interface, with a variety of vacuum pump combination.
7. Condenser and operation panel are all stainless steel, corrosion resistant and easy to clean.
8. Pre-freeze shelf can work as a lead tube, speed up the drying speed.
9. Optional charging valve, filling dry inert gas.
10. Cascade refrigeration is optional, applied for -80°C machine.

### Technical superiority

- ◆ Cold trap temperatures: -55°C, -80°C, -110°C optional.
- ◆ Deep low-temperature cold trap captures volatile organic solvents, preventing corrosion. Can handle solvent solutions below 95% concentration.
- ◆ Achieved -110°C cold trap temperature for diverse freeze-drying needs, gaining market recognition.



Vacuum pump connector Vacuum pump



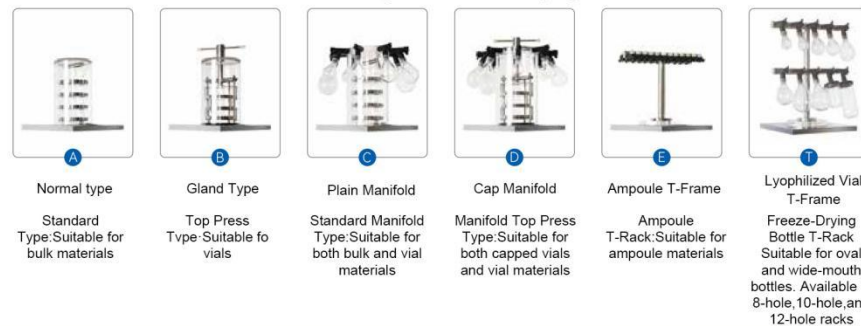
LCD touch screen Pre-freezing function Compressor Environment friendly refrigerant Built-in heat exchanger Vacuum pump against oil returns Defrosting function

## Technical specifications:

Model	Unit	TOPT-10		TOPT-12		TOPT-18		
		Top-press 10B / 10D	Ordinary 10A / 10C	Top-press 12B / 12D	Ordinary 12A / 12C	Top-press 18B / 8D	Ordinary 18A / 18C	
Freeze-drying area	m <sup>2</sup>	0.08	0.12	0.08	0.12	0.09	0.18	0.27
Cold trap temp	°C	< -55°C; < -80°C, -110°C (optional)						
Vacuum degree	Pa	< 5						
Water-capture capability	Kg/24 h	3-4		3-4		6		
Material tray	mm	φ 180*3	φ 200*4	φ 180*3	φ 200*4	φ 200*3	φ 200*4	φ 200*6
Power	w	970		1070		1400		
Tray spacing	mm	70		70		70		
Material volume put in device (10mm)	L	0.8	1.2	0.8	1.2	0.9	1.8	2.7
φ 12mm penicillin bottle	Pcs	492	-	492	-	615	-	-
φ 16mm penicillin bottle	Pcs	297	-	297	-	345	-	-
φ 22mm penicillin bottle	Pcs	147	-	147	-	183	-	-
Dimension of overall (60°C)	mm	615x450x370		580x500x720		630x580x970		
Dimension of overall (85°C)	mm	850x680x405		770x550x720		810x580x950		
Drying chamber	mm	φ260x430	φ260x490	φ260x430	φ260x490	φ300x445	φ300x540	
Diameter of cold trap	mm	φ215x140		φ215x240		φ270x400		
Defrosting	-	Electric defrost						
Power	-	1P, 220V						
Eggplant shaped bottle 100ml/250ml/500ml/1000ml		10D/ 10C have 10A/10B no		12D/ 12C have 12A/12B no		18D/ 18C have 18A/18B no		

## Selection manual

### Flexible configuration of the drying unit:



Normal type Standard Type: Suitable for bulk materials  
Gland Type Top Press Type: Suitable for vials  
Plain Manifold Standard Manifold Type: Suitable for both bulk and vial materials  
Cap Manifold Manifold Top Press Type: Suitable for both capped vials and vial materials  
Ampoule T-Frame Ampoule T-Rack: Suitable for ampoule materials  
Lyophilized Vial T-Frame Freeze-Drying Bottle T-Rack: Suitable for oval and wide-mouth bottles. Available in 8-hole, 10-hole, and 12-hole racks

## TOPT-18T-24 Series of freeze-dryer

TOPT-18 Flask Type Freeze Dryer, trap temperature  $\leq -85^{\circ}\text{C}$  (optional  $\leq -110^{\circ}\text{C}$ ). Ideal for preserving bacteria, fungi, peptides, and microbial strains with long shelf life and broad applications.

### Key features

- ◆ Designed for specialized freeze-drying needs in biomedicine, peptides, and synthesis.
- ◆ Leak-free stainless steel T-rack with customizable channels.
- ◆ Customizable internal pipeline structure for the T-rack with independent channels.
- ◆ Easy bottle removal/installation without machine stoppage.
- ◆ Dedicated vacuum pump for rapid, stable operation.
- ◆ 7-inch touchscreen for real-time data display.
- ◆ Complies with FDA and GMP requirements; freeze-drying data can be exported via USB.
- ◆ Nitrogen gas inlet for inert gas filling.
- ◆ Efficient electric trap defrosting.
- ◆ Compatible with a low-temperature rotary freezing instrument.



### Performance parameters

- ◆ Cold trap temperature:  $\leq -85^{\circ}\text{C}$  (no-load), optional  $\leq -110^{\circ}\text{C}$ .
- ◆ Vacuum degree:  $\leq 1\text{pa}$  (no-load).
- ◆ Flask hanging capacity: 24 bottles/customizable.
- ◆ Eggplant shaped lask: 100/250/500/1000ml.
- ◆ Wide mouth lask: 600/1200ml.
- ◆ Defrosting: Electric defrost.
- ◆ T-Rack Material: sus 304 stainless steel, upgradable sus 316L, The trap can be coated for corrosion resistance.

## TOPT-12S /18S Heating in-situ freeze dryer

TOPT-12S/18S heating in-situ freeze dryer series are small vertical freeze dryer machine. These models have shelf heating and programmable function. They are suitable for lab use or small-scale production and they can meet requirements for most laboratories.



### Example of freeze drying



### Main features:

1. 5 inch embedded integrated color touch-screen, the operating system is a set of advanced Cortex-A8 processor, 128 MB capacity of high performance control system.
2. The machine control system can save 40 freeze-drying schemes, each scheme can be set up 40 segments of temperature parameter values. Shelf has heating function.
3. Operating system has manual operation and automatic operation, two working modes, to improve the selectivity of freeze-drying process.
4. Have automatic alarm and protection function, equipment failure is easy to judge
5. Have password protection function, to ensure the safe and reliable operation.
6. Cascade refrigeration is optional, applied for  $-80^{\circ}\text{C}$  machine.
7. Optional remote monitoring and remote operation functions, convenient for user operation in different conditions.



TOPT-12SC/18SC



TOPT-12SE



Freeze-dried Fruits and Vegetables



Freeze-dried chicken



Freeze-dried leeches



Soil

### Technical specifications:

Model	Unit	TOPT-12S		TOPT-18S		
		Top-press 12SB / 12SD	Ordinary 12SA / 12SC	Top-press 18SB / 18SD	Ordinary 18SA / 18SC	
Freeze-drying area	m <sup>2</sup>	0.08	0.12	0.09	0.18	0.27
Cold trap temp	°C	$< -50^{\circ}\text{C}$ (no-loading), optional $< -80^{\circ}\text{C}$ (no-loading)				
Vacuum degree	Pa	$< 5$				
Water-capture capability	Kg/24h	3-4		6		
Material tray	mm	$\varnothing 180^*3$	$\varnothing 200^*4$	$\varnothing 200^*3$	$\varnothing 200^*4$	$\varnothing 200^*6$
Power	w	1070		1400		
weight	kg	62		105		
Dimension	mm	580x500x720+(430 drum height)		630x580x970+(460 drum height)		
Material volume put in device (10mm)	L	0.8	1.2	0.9	1.8	2.7
$\varnothing 12\text{mm}$ penicillin bottle	Pcs	492	-	615	-	-
$\varnothing 16\text{mm}$ penicillin bottle	Pcs	297	-	345	-	-
$\varnothing 22\text{mm}$ penicillin bottle	Pcs	147	-	183	-	-
Eggplant shaped bottle 100ml/250ml/500ml/1000ml		12SD/ 12SC have 12SA/12SB no		18SD/ 18SC have 18SA/18SB no		



## TPV-10FD/30FD/50FD Electric-heating freeze dryer

TPV-10FD/30FD/50FD series of freeze dryers with electric heating function (patent machine). Products can be freeze dried in situ. It changes the complex operation and prevent sample pollution, and make drying automation. These models have shelf heating and programmable functions. They can record freeze drying curves, data can be output by U-disk. User can clearly view the freeze drying process.



TPV-10FD



TPV-50FD



TPV-10GD

### Main features:

- 7 inch embedded integrated color touch-screen. PLC controlling. Display drying curve.
- The machine control system can save 40 freeze-drying schemes, each scheme can be set up 40 segments of temperature parameter values.
- Shelf has refrigeration and heating function. Products pre-freezing and drying process both finished in drying chamber. No need of low temperature freezer, no pollution. At the same time provide guarantee conditions for automated production.
- Control system automatically records the data and generate the freeze-drying curves. With USB communication interface, experimental data can be output by a USB flash disk.
- Operating system has manual operation and automatic operation, two working modes, to improve the selectivity of freeze-drying process.
- Drying chamber door use colorless transparent organic glass, use can clearly observe the sample during the process of freeze-drying.
- Unique design of vacuum air channel, condenser has better and uniform water capture capacity.
- Have password protection function, to ensure the safe and reliable operation.
- Optional charging valve, filling dry inert gas.
- Optional manifold ports for flask connection, round bottom flask and wide-neck flask.
- Optional eutectic point test functions, convenient for getting freeze-drying process of the sample.
- Optional remote monitoring and remote operation functions, convenient for user operation in different conditions.
- Vacuum regulation device is optional.

### Technical specifications:

		TPV-10FD	TPV-10GD	TPV-30FD	TPV-50FD
Specification	Unit	Normal type	Gland type	Normal type	Normal type
Shelves usable area	m <sup>2</sup>	0.2	0.1	0.4	0.6
Cold trap temperature	°C	≤ -60 (no-load) , optional ≤ -80, (no-load)			
Vacuum degree	Pa	≤ 5 (no-load)			
Bulkhead temperature range	°C	-50 ~ +70 (no-load) , optional -70 ~ +70			
Ice Capacity	kg/24h	≤ 6		≤ 8	≤ 10
Material tray	mm	395x265	395x265	335x295	335x295
Layers of tray	EA	2	1	4	6
Bulkhead size	mm	400x270	400x270	340x300	340x300
Bulkhead spacing	mm	70		70	50
Power(-60°C)	w	2000		2700	4500
Weight	kg	210		280	450
Dimension of Overall	mm	725×600×1270		773×750×1472	795×895×1535
Material (Thickness 10mm)	L	2	1	4	6
Pressure plug method	-	-	Manual Press Plug	-	-
Capacity(Vial)	-	-	-	-	-
Defrosting	-	Natural defrost (optional electric defrost)			
Power	-	1P, 220V			3P, 380V /1P, 220V

## TPV-20F/30F/50F/100F Silicone oil heating freeze dryer

- TPV-20F/30F/50F/100F (silicon oil heating) freeze dryer, freezing and drying process made in situ.
- It changes the complex operation and prevent sample pollution, and make drying automation. These models have shelf heating and programmable functions.
- They can record freeze drying curves, data can be output by U-disk. User can clearly view the freeze drying process.

### Main Features:

- ◆ Heating and cooling rates reach 1°C/minute, matching industrial freeze dryers.
- ◆ High-quality stainless steel construction for contact surfaces with easy-to-clean internal components.
- ◆ The top shelf layer acts as a heat radiation layer to ensure uniform heating.
- ◆ Patented technology for shelves and the cold trap ensures uniform drying, supported by a stable and user-friendly control system.
- ◆ Utilizes the same PLC system as industrial freeze dryers, offering precise process control and repeatability.
- ◆ Capable of designing, loading, and storing real-time process programs, recording freeze-drying processes, generating curves, reports, historical data, and alarms.
- ◆ In-situ vacuum freeze dryer with automated process
- ◆ Dual-chamber design: freeze trap and drying chamber
- ◆ Tool-free maintenance access
- ◆ Each layer has an independent sample temperature probe
- ◆ Rapid freeze trap cooling: -40 °C in <20 mins
- ◆ Adjustable sublimation curve control
- ◆ Precise tray temperature control (±1 °C/±0.5 °C)
- ◆ PLC with PID regulation
- ◆ Nitrogen gas for inert drying
- ◆ Maintenance reminders and safety protections



Freeze-dried xeraphum



Freeze-dried ome



TPV-20F



TPV-30F/50F



TPV-100F

**Technical specifications:**

		TPV-20F	TPV-30F	TPV-50F	TPV-100F	TPV-20G	TPV-30G	TPV-50G	TPV-100G
Specification	Unit	Normal type	Normal type	Normal type	Normal type	Hydraulic gland type	Hydraulic gland type	Hydraulic gland type	Hydraulic gland type
Freeze-drying area	m <sup>2</sup>	0.3	0.4	0.7	1.03	0.2	0.3	0.5	1.15
Cold Trap Temperature	°C	< -80 (no-load)							
Ultimate vacuum	Pa	≤1 (no-load)							
Separator Temperature Range	°C	-55~+70 (no-load)							
Water trapping capacity	kg/24h	≥6	≥8	≥10	≥15	≥6	≥8	≥10	≥15
Number of Partition Layers	floor	3+1	4+1	4+1	6+1	2+1	3+1	3+1	4+1
Partition size	mm	400x270	340x300	480x360	480x360	400x270	300x340	410x410	480x600
Spacing between partitions	mm	70	50	50/optional 70	70	100	70	100	100
Power	kw	3	4.5	5.5	6.5	4	5.5	6.5	7.5
Main machine weight	kg	300	400	600	700	300	400	800	1000
Dimension of main machine	mm	1033x781x1580	825x928x1366	823x1008x1420	876x1190x1727	1033x781x1704	853x1272x1679	911x1405x1983	1823x1144x2014
Loadable material (thickness 10mm)	L	3	4	7	10	2	3	5	11
Can be loaded into syringes	pcs pcs pcs	-	-	-	-	Φ12mm: 154 Φ16mm: 88 Φ22mm: 44	Φ12mm: 2187 Φ16mm: 1200 Φ22mm: 654	Φ12mm: 3705 Φ16mm: 2058 Φ22mm: 1050	Φ12mm: 8624 Φ16mm: 4788 Φ22mm: 2460
Defrost mode	-	Individual cold trap electric defrost	Natural frosting in one box trap	Natural defrosting with regarded case trap Personal electric defrosting with separate cold trap	Individual cold trap electric defrost	Individual cold trap electric defrost	Individual cold trap electric defrost	Individual cold trap electric defrost	Individual cold trap electric defrost
Safety device	-	Buzzer alarm, emergency stop switch, overpressure protection							
Power supply	-	1P,220V		3P,380V: 3P,220V Customize			1P,220V		3P,380V: 3P,220V Customize

**TPV-200F/300F Silicon oil heating freeze dryer**

This model is applicable to: pharmaceutical industry

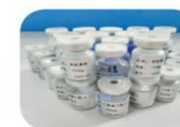
1.TPV-200F/300F freeze dryer use double color touch screen and PLC as control center ,control system stable and reliable. it can store 36groups of freeze drying program , and each program can be set up 36 segments. It can display freeze drying curve and automatically records data.Freeze drying data can be output by USB flask disk. This model is suitable for pilot scale and small scale production.

2.TPV-200F/300F model freeze dryer, with two compressors as cascade refrigeration ,condenser temperature can reach <-70°C.

3. Samples can be frozen and drying on shelf directly. With air cooling unit, easy to install and operate.It has two types:standard type and top press type.



API



Peptides



In vitro diagnostic reagents



Deer blood



Bioactive Factor



Hemostatic cotton



### Main Features:

1. Pre-Freezing and drying process are both finished on shelf, simple drying process.
2. Silicone oil circulatory medium, high accuracy of temperature control, shelf difference  $\leq 1^{\circ}\text{C}$ , uniform drying effect.
3. Shelf temp. could be adjusted, controlled, groped, pilot and industrial process.
4. Condenser separated from drying chamber ,better water capture capability and shorter drying time.
5. Touch screen operation, PLC control, display drying curve.
6. Square tray is not easy out of shape, convenient operating and clean.
7. Optional charging valve, filling dry inert gas.
8. Optional eutectic point test functions.
9. Optional PC software to realize the remote control.

### Technical specifications:

	TPV-200F	TPV-300F
Freeze drying area	2.25 m <sup>2</sup>	3.15 m <sup>2</sup>
Condenser temperature	$<-75^{\circ}\text{C}$	
Vacuum degree	$<5\text{Pa}$	
Water capture capacity	30Kg/24h	60Kg/24h
Cooling method	Air cooling , draughtly, ambient temperature $\leq 25^{\circ}\text{C}$	
Defrosting method	electric defrosting	
Shelf size	500x900mm*5+1	500x900mm*7+1
Power	15kw	
Weight	1200kg	1500kg
Dimension (mm)	1200x2100x1700	1200x2300x1700
Bulk capacity Thickness:10mm	22L	30L

### TPV-20FQ/30FQ/50FQ/100FQ/200FQ GMP freeze dryer

The TPV-FQ series GMP freeze-drying equipment meets the requirements of the production process. The equipment's internal surfaces, which come into direct contact with drugs, are smooth, even, and free from dead corners, ensuring effective quality control. The equipment itself does not pollute the production environment or contaminate materials. It prevents cross-contamination without affecting product quality, making it easy to clean and maintain. Optional features include CIP and VHP functions.

### Multiple optional configurations available



- ◆ Program setting
- ◆ Authorization management
- ◆ Curve temperature control
- ◆ Automatic air intake
- ◆ Backfill filtration
- ◆ Remote control
- ◆ Endpoint determination
- ◆ Eutectic point testing
- ◆ External vial attachment
- ◆ Chamber trap isolation valve
- ◆ Vacuum fine-tuning
- ◆ Pressure rise experiment
- ◆ Data recording and storage
- ◆ Capacitance vacuum gauge

#### Product Variety

TOPTION offers a range of specialized products, including ultra-low-temperature freeze dryers with partition temperatures of  $-55^{\circ}\text{C}$ ,  $(-65^{\circ}\text{C}, -75^{\circ}\text{C}, -100^{\circ}\text{C}$  optional). These are widely used in domestic research institutions and biopharmaceutical companies.

#### Satisfying Unique Sample Processing Needs

In pharmaceuticals, life sciences, and specialty material freeze-drying, certain products have exceptionally low critical temperatures ( $T_e, T_m, T_c, T_g1$ ), often below conventional freeze-dryer temperature controls. TOPTION specialized design and process enhancements enable breakthroughs in handling these challenging samples.

#### Compliant with GMP and Other Relevant Standards

TOPTION full range of freeze dryers employs a proprietary and copyrighted drying control system, renowned for its user-friendliness and reliability. Customize the secure and reliable control system, remote control system, ensure smooth freeze-drying processes, in compliance with U.S.FDA CFR PART 11 and updated GMP standards.

#### Verification document

Installation Verification (IQ), Operation Verification (OQ), Factory Acceptance Test (FAT), Site Acceptance Test (SAT), Operation Manual (OM), Maintenance Manual (MM), Installation Manual (IM), Process Flow Chart (P&ID), etc.

		TPV-20FQ	TPV-30FQ	TPV-50FQ	TPV-100FQ	TPV-20GQ	TPV-30GQ	TPV-50GQ	
Specification	Unit	Normal type	Normal type	Normal type	Normal type	Gland type	Gland type	Gland type	
Freeze-drying area	m <sup>2</sup>	0.3	0.4	0.7	1.03	0.2	0.3	0.5	
Cold Trap Temperature	$^{\circ}\text{C}$	$\leq -75 / \leq -85 / \leq -110$ (no-load)							
Ultimate vacuum	Pa	$\leq 1$ (no-load)							
Minimum Temperature of Bulkhead	$^{\circ}\text{C}$	$-55 / -65 / -75 / -100$							
Maximum Temperature of Separator	$^{\circ}\text{C}$	70 / 80							
Water trapping capacity	kg/24h	$\geq 6$	$\geq 8$	$\geq 10$	$\geq 15$	$\geq 6$	$\geq 8$	$\geq 10$	
Number of Partition Layers	floor	3+1	4+1	4+1	6+1	2+1	3+1	3+1	
Dimension of spacer	mm	400x270	340x300	480x360	480x360	400x270	300x340	410x410	
Spacing between partitions	mm	70	70	70	70	100	70	100	
Power of the whole machine	kw	3	4.5	5.5	6.5	4	5.5	6.5	
Main machine weight	kg	300	400	600	700	340	400	800	
Outer dimension of main machine	mm	1390x815x1631	1492x780x1570	1662x790x1450	1735x930x1633	1390x815x1590	1687x780x1673	1730x935x1855	
Can be loaded into vials	pcs pcs pcs	-	-	-	-	$\Phi 12\text{mm}: 1554$ $\Phi 16\text{mm}: 868$ $\Phi 22\text{mm}: 440$	$\Phi 12\text{mm}: 2187$ $\Phi 16\text{mm}: 1200$ $\Phi 22\text{mm}: 654$	$\Phi 12\text{mm}: 3708$ $\Phi 16\text{mm}: 2058$ $\Phi 22\text{mm}: 1050$	
Material(Thickness 10mm)	L	3	4	7	10	2	3	5	
Pressure stopper mode	-	-	-	-	-	Hydraulic pressure, plug force approx. 1.0kg/cm <sup>2</sup>			
Vacuum control	-	Solenoid valve + trimmer valve							
Defrosting mode	-	Separate cold trap, electric defrost							
Safety device	-	Buzzer alarm, emergency stop switch, overpressure protection							
Chassis material	-	SUS 304 stainless steel					SUS 304 stainless steel		
Power supply	-	1P, 220V		3P, 380V		1P, 220V		3P, 380V	

#### The above models can be equipped with:

Eutectic point testing, Chamber trap isolation valve, Data recorder, Chart recorder/online printing, PC or mobile app remote control, Imported brand vacuum pump, Anti-oil return solenoid valve, Oil mist filter, For detailed technical specifications, please refer to our website or contact our staff.

## GZLY suitable for medical and pharmaceutical vacuum freeze dryer



1. GZLY series freeze dryers use double color touch screen and PLC as control center ,control system stable and reliable. it can store 33groups of freeze drying program , and each program can be set up 36 segments.

2. It can display freeze drying curve and automatically records data. Freeze drying data can be output by USB flask disk. This model is suitable for pilot scale and small scale production.

3.GZLY series freeze dryers use Bitzer refrigeration unit,condenser temperature can reach <-75°C,performance stable . It meets national relative standards ,according to GMP and implementation guidelines of GMP, and GB/T522 6.1-1996.

### Technical advantages:

1. Stainless steel plates are imported, guarantee smooth finish of chamber.Ensure aseptic requirements.
2. Special O type door sealing, to prevent water store up, and meet aseptic requirements.
3. Shelf with high strength, pressure test can reach 0.3Mpa, durable for long time.
4. Shelf by machine processing, ensure high demand of flatness.
5. Shelf temperature control accuracy +0.5°C (PID control, after balance).
6. Chamber and shelf are tested by helium mass spectrometer for leaking test.
7. Condenser and cooling tube all tested by helium mass spectrometer for leaking test.
8. Compressor is Bitzer unit, with more stable and reliable performance.
9. With environment friendly refrigerant.
10. Refrigeration system has many interlock protection functions.
11. Pressure automatic adjustment function under low load situation in later period of freeze drying.
12. Oil pressure multiple protection function for refrigeration system.
13. Multiple protection function for motor of compressor.
14. HMI display working state of main parts, valve, temperature and vacuum degree.
15. User can set 32 groups of freeze drying parameters.
16. Freeze drying process display segments, user can skip.
17. User can adjust freeze drying parameter at any time.

### Technical specifications:

	GZLY-1	GZLY-2	GZLY-3	GZLY-5	GZLY-10	GZLY-15	GZLY-20	GZLY-30	GZLY-40
Freeze drying area	1.152 m <sup>2</sup>	2.16 m <sup>2</sup>	3.24 m <sup>2</sup>	5.25 m <sup>2</sup>	10.5 m <sup>2</sup>	15 m <sup>2</sup>	20.2 m <sup>2</sup>	30 m <sup>2</sup>	40 m <sup>2</sup>
Condenser temperature	< -75°C								
Partition board temperature	-55°C ~ 70°C								
Control accuracy	±1°C								
Vacuum degree	< 5Pa								
Cooling method	water cooling								
Water capture capacity	20Kg/24h	40Kg/24h	60Kg/24h	100kg/24h	> 200kg/24h	> 300kg/24h	40kg/24h	60kg/24h	80kg/24h
Partition board size	480x600mm 4+1	610x910mm 4+1	480x600mm 6+1	750x1000mm 7+1	990x1520mm 7+1	1520 x 990mm*10+1	1210x1520mm 11+1	1520x1800mm 11+1	1520x1800mm 15+1
Installed Power	7.5kw	12kw	15kw	24kw	46kw	83kw	85kw	160kw	180kw
Weight	1500kg	2600kg	2800kg	4200kg	7000kg	9000kg	11000kg	15000kg	20000kg
Dimension(mm)	1640x1100 x1830	2500x1560 x2020	2500x1560 x2300	4000x1360 x2800	5500x1670 x2800	6500x2300x34 00	6500x1980 x2800	7500x2280 x2900	7500x2280 x3300
Bulk capacity Thickness:10mm	10L	20L	30L	50L	100L	150L	200L	300L	400L
Vial loading number (pcs)	Φ12mm: 8400	Φ12mm: 12600	Φ12mm: 16000	Φ12mm: 35000	Φ12mm: 65300	Φ12mm: 95700	Φ12mm: 130400	Φ12mm: 187700	Φ12mm: 56000
	Φ16mm: 4706	Φ16mm: 6800	Φ16mm: 10000	Φ16mm: 24800	Φ16mm: 46400	Φ16mm: 66400	Φ16mm: 92800	Φ16mm: 133600	Φ16mm: 82200
	Φ22mm: 2428	Φ22mm: 3600	Φ22mm: 5300	Φ22mm: 12700	Φ22mm: 23700	Φ22mm: 33900	Φ22mm: 47400	Φ22mm: 68300	Φ22mm: 93000

## GZL series vacuum freeze dryer



### Main Features:

1. Pre-Freezing and drying process are both finished on shelf.
2. Silicon oil as circulation medium, with high accuracy of temperature control. Shelf temperature uniformity ≤ 1°C , with uniform drying effect.
3. Shelf temperature adjustable, controlled,suitable for pilot and production.
4. Drying chamber and condenser as separated structure, with better water capturecapacity and shorter drying time.
5. Touch screen operation,PLC control, display drying curve.
6. Square tray easy to operate and clean.
7. With charging valve, to fill dry inert gas.
8. Optional eutectic point test functions.
9. Optional PC software to realize the remote control.
- 10.Ozone disinfection function is optional.



### Technical advantages:

1. Stainless steel plates are imported, guarantee smooth finish of chamber, Ensure aseptic requirements.
2. Shelf with high strength, pressure test can reach 0.3Mpa, durable for long time.
3. Shelf by machine processing, ensure high demand of flatness.
4. Shelf temperature control accuracy  $\pm 0.5^{\circ}\text{C}$  (PID control, after balance)
5. Special O type door sealing, to prevent water store up, and meet aseptic requirements
6. Chamber and shelf are tested by helium mass spectrometer for leaking test.
7. Condenser and coiling tube all tested by helium mass spectrometer for leaking test.
8. Compressor is Bitzer unit, with more stable and reliable performance.
9. With environment friendly refrigerant.
10. Refrigeration system has many interlock protection functions.
11. Pressure automatic adjustment function under low load situation in later period of freeze drying.
12. Oil pressure multiple protection function for refrigeration system.
13. Multiple protection function for motor of compressor.
14. HMI display working state of main parts, valve, temperature and vacuum degree.
15. User can set 32 groups of freeze drying parameters.
16. Freeze drying process display segments, user can skip.
17. User can adjust freeze drying parameter at any time.
18. Ozone disinfection function is optional.

### Freeze-dried instances:



### Customizable CIP and SIP system



CIP and SIP system freeze dryer is designed based on mature technology, use top quality material and parts which is widely accepted in pharmaceutical industry. Its manufacturing process use the most advanced technology, equipment totally meet cGMP standard, software meets 21 CFR Part 11 standard.

### Technical specifications:

	GZL-1	GZL-2	GZL-3	GZL-5	GZL-10	GZL-15	GZL-20	GZL-30	GZL-40
Freeze drying area	1.152 m <sup>2</sup>	2.16 m <sup>2</sup>	3.24 m <sup>2</sup>	5.25 m <sup>2</sup>	10.5 m <sup>2</sup>	15 m <sup>2</sup>	20.2 m <sup>2</sup>	30 m <sup>2</sup>	40 m <sup>2</sup>
Condenser temperature	< -75 <sup>o</sup> C								
Partition board temperature	-55 <sup>o</sup> C ~ 70 <sup>o</sup> C								
control accuracy	$\pm 1^{\circ}\text{C}$								
Vacuum degree	< 5Pa								
Cooling method	water cooling								
Water capture capacity	20Kg/24h	40Kg/24h	60Kg/24h	100kg/24h	> 200kg/24h	> 300kg/24h	400kg/24h	600kg/24h	800kg/24h
Partition board size	480x600mm 4+1	610x910mm 4+1	480x600mm 6+1	750x1000mm 7+1	990x1520mm 7+1	1520 x 990mm*10+1	1210x1520mm 11+1	1520x1800mm 11+1	1520x1800mm 15+1
Installed Powe	7.5kw	12kw	15kw	24kw	46kw	75kw	85kw	160kw	180kw
Weight	1200kg	2000kg	2800kg	3500kg	6500kg	8000kg	9500kg	15000kg	20000kg
Dimension(mm)	1640x1100x1830	2500x1560x2020	2500x1560x2300	4000x1360x2800	5500x1670x2800	6500x2300x3400	6500x1980x2800	7500x2280x2900	7500x2280x3300
Bulk capacity Thickness:10mm	10L	20L	30L	50L	100L	150L	200L	300L	400L

### Freeze drying chamber / door / shelf



Freeze drying chamber is a kind of pressure vessel and products finish its vacuum freeze drying process in it. Chamber body generally use stainless steel square box, this reasonable structure design could make clean be more convenient and reduce the blind angle.

Put products in shelf, through freezing medium control temperature up/down, to achieve prefreezing and sublimation dehydration, besides, the stoppering can be fulfilled by shelves before products exiting from the chamber. Use indirect cooling and heating method. Every shelf through special design, produce and processing, so could achieve uniform cooling and heating.





**Cold Trap**  
Steam flow guidance maximizes cold trap utilization, ensuring uniform ice formation.



**Refrigeration System**  
Independent circulatory refrigeration system offers strong cooling capacity with low energy consumption.



**Vacuum System**  
LEYBOLD or EDWARDS pumps for high-performance vacuum system enhances sublimation and drying efficiency.



**Circulation System**  
GRUNDFOS pumps for long service life. Precise temperature control with minimal differentials.



**Hydraulic System**  
Internationally renowned hydraulic components for stability, Real-time pressure monitoring and precise control.



**Pneumatic System**  
Pressure monitoring and precise control for accurate air pressure. Valves equipped with position indicators for system control.



**Control System**  
Advanced PLC and SCADA systems for easy management of complex process cycles. User access management, operation logs, report printing, and product traceability.



**CIP System**  
Internationally renowned cleaning components for thorough cleaning. Utilizes mist spraying and programmed actions for thorough shelf cleaning.



**SIP System**  
Pure steam achieved through pulsating air intake and steam injections. Integrity testing and pressure relief filter for safe sterilization.



**Automatic Loading and Unloading System**  
This system can automatically perform material transport and loading/unloading operations in an A-grade environment within a B-grade background.

## Workshop show



GZL-1



GZL-3



GZL-10



GZL-10



GZL-20



GZLY-1



GZLY-2



GZLY-5



GZLY-10





## Customer Feedback Case Show



Freeze-dried cosmetics



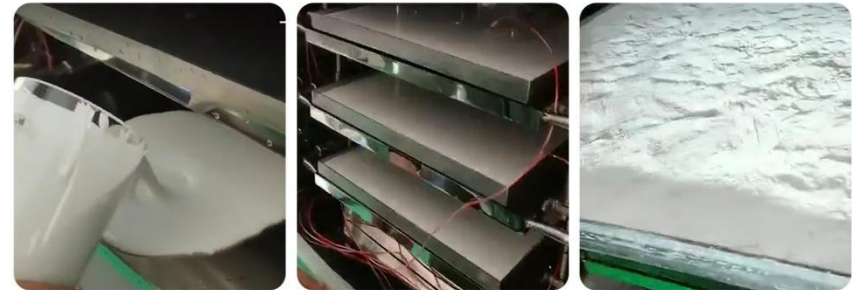
Freeze-dried Natural Colors



Freeze-dried probiotics



Freeze-dried royal jelly



Freeze-drying of polymer materials



Freeze-drying of polymer materials

Freeze-dried antler



Freeze-dried Chinese Medicine Extract



Freeze-drying Biologicals

Freeze-dried graphene

Freeze-dried cordyceps