HYLEC

FREEZE DRYING MACHINES

Leader of packaging testing solutions

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SERIES PRODUCT

MULTIPLE OPTIONS AVAILABLE FOR STANDARD PRODUCTS.

CUSTOMIZATION AVAILABLE FOR NON-STANDARD PRODUCTS.

MINITYPE INTELLIGENT FREEZE DRYER

LABORATORY FREEZE DRYER

PILOT-TYPE LYOPHILIZERS

BIO-PRODUCT FREEZE DRYER

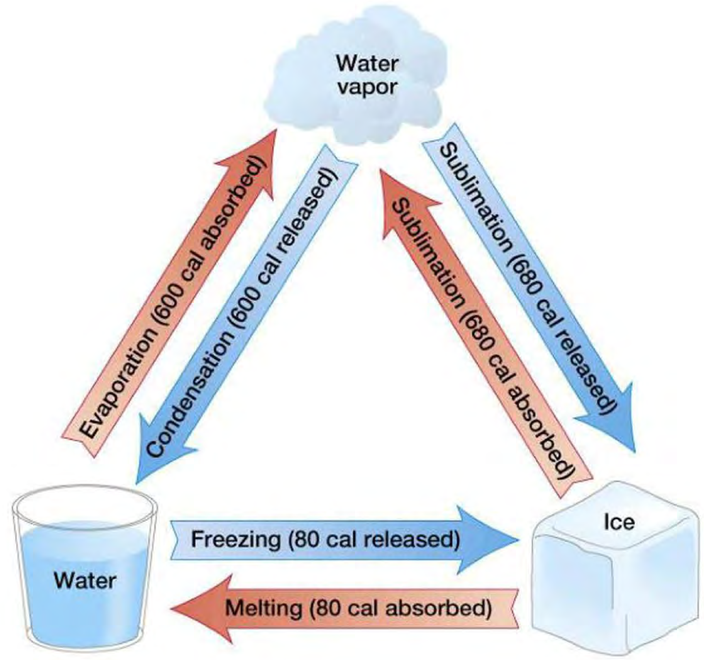
FOOD FREEZE DRYER

PRINCIPLE AND TECHNICAL OF FREEZE DRYING

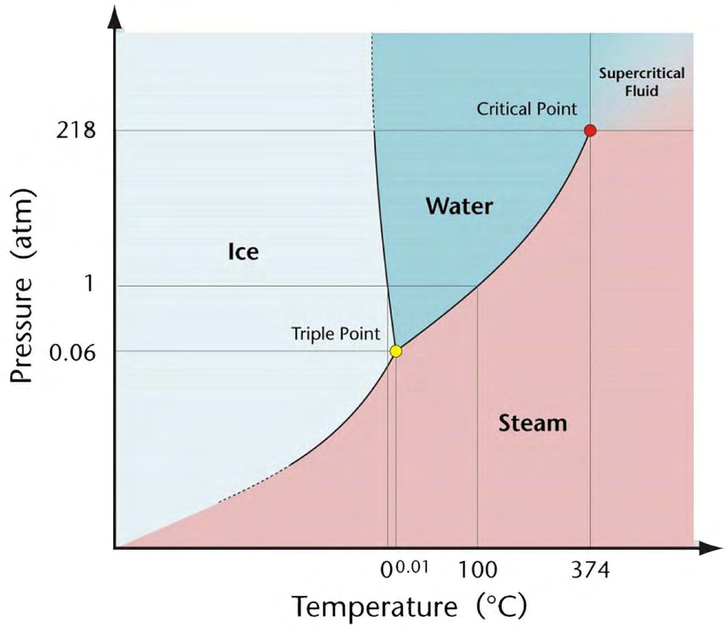
Freeze-drying is a process that removes moisture from a substance by freezing it and then sublimating the frozen water directly into a gas. It involves freezing the substance, placing it in a vacuum to allow sublimation, and finally, removing the water vapor.

This method preserves the product's structure and quality, making it ideal for pharmaceuticals and food preservation.

Three States of Water



Three phases of water



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APPLICATION AREA

Suitable for：

Pharmaceutical, food, biotechnology, chemical, and other industries' products for vacuum freeze-drying.

LABORATORY FREEZE-DRYING MACHINE

Standard type | Crimp cap type | Manifold type | Manifold with crimp cap type

(Multiple options for mixing and matching, please consult our sales team.)

PRODUCT INTRODUCTION

The FD series includes standard type, crimp cap type, manifold type, and manifold with crimp cap type, suitable for thermosensitive materials. The FD laboratory freeze dryer series adopts an air-cooled condensing refrigeration system. The trap body is made of high-quality stainless steel and can be pre-frozen. The transparent drying chamber allows for easy observation of the entire freeze-drying process.

SCOPE OF USE

It is used in laboratory and home settings for experimental research and development of freeze-drying processes for various applications, including food, seasonings, additives, bioproducts, extracts, traditional Chinese medicinal materials, and other substances.

freeze-dried pharmaceuticals

freeze-dried extracts

freeze-dried fibers

freeze-dried bioproducts

PERFORMANCE CHARACTERISTICS

- Standard type: Used for most materials, where materials are directly placed on the material tray for drying.
- Crimp cap type: When materials need to be dried in vials (syringe bottles) and must not be exposed to external air after drying, the materials are sealed with crimp caps under vacuum after drying.
- Manifold type: When multiple varieties of materials need to be dried without affecting each other, the manifold type is used, which allows for easy observation and temporary sampling.
- Manifold with crimp cap type: This type of dryer is chosen when multiple materials need to be dried, some of which require drying in vials (syringe bottles) and others need different treatment.
- The dryer is equipped with an imported fully enclosed refrigeration unit with low temperatures and strong water-catching capacity. It adopts air-cooling for heat dissipation, eliminating the need for water cooling.
- The vacuum connections use internationally standardized components, making disassembly and installation simple and convenient, with reliable sealing performance.
- The temperature of the cold trap and the vacuum degree of the sample are displayed using LED digits for clear and concise readings.
- Specifically designed touch-sensitive soft keys allow for quick and accurate function settings, making the operation simple and convenient.
- The transparent dome-shaped drying chamber employs natural heating, ensuring safety and providing a clear view.
- A specially designed stainless steel sample rack allows for adjustable spacing between trays in the standard type and flexible setting of layers.
- Stainless steel cold trap and tabletop ensure cleanliness, hygiene, and corrosion resistance, while also providing an aesthetically pleasing appearance.

PRODUCT PARAMETERS

Type		Condensation temperature(℃)	Vacuum degree (Pa)	Freeze-drying area(㎡)	Water-catching capacity(Kg/24h)	Power(w)
TF-FD-1	Standard type	≤-50	≤10	0.12	3	1100
	Crimp cap type	≤-50		0.07	3	1100
TF-FD-1L	Standard type	<-80		0.12	3	1600
	Crimp cap type	<-80		0.07	3	1600
TF-FD-18	Manifold type	≤-50		0.18	6	1500
	Manifold with crimp cap type	≤-50		0.11	6	1500
TF-FD-27	Manifold type	<-80		0.27	6	2200
	Manifold with crimp cap type	≤-60		0.11	6	2200

SMALL FREEZE-DRYING MACHINE

PRODUCT INTRODUCTION

HFD small freeze dryer, controls the sublimation of material moisture. This series of models have programmable heating and temperature control functions, allowing users to view the freeze-drying curve and conveniently observe the freeze-drying process of materials.

SCOPE OF USE

Applied in laboratories, households, and other areas for freeze-drying experiments and research and development of various food, condiments, additives, biological products, extracts, and traditional Chinese medicinal materials.


freeze-Yogurt cubes


freeze-Vegetables


freeze-Meat


freeze-Strawberries

PERFORMANCE CHARACTERISTICS

- In-site pre-freeze drying, one-button startup.
- Adjustable and controllable production process with temperature settings, featuring program running prompts.
- Multi-segment temperature control program, allowing modification of parameters during operation.
- Touchscreen operation, one-key USB data export.
- Temperature and vacuum protection to ensure smooth equipment operation and drying effectiveness.
- The drying chamber features high-transparency colorless transparent organic glass doors, enabling clear observation of material changes during the operation.
- Fully automated control throughout the freeze-drying process, with options to choose program or vacuum mode.
- One-key defrost function for easy and quick operation.

(Multiple options for mixing and matching, please consult our sales team.)

PRODUCT PARAMETERS

Type	Condensation temperature(℃)	Vacuum degree (Pa)	Processing capacity(Kg)	Freeze-drying area(㎡)	Water-catching capacity(Kg/24h)	Power(W)
TF-HFD-1	≤-40℃	10	1	0.1	3	750
TF-HFD-1A	≤-70℃		1	0.1	3	1700
TF-HFD-4	≤-40℃		3	0.4	5	1100
TF-HFD-4A	≤-70℃		3	0.4	6	2600
TF-HFD-6	≤-40℃		5	0.6	6	2300
TF-HFD-6A	≤-70℃		5	0.6	10	3300
TF-HFD-10	≤-40℃		8	1.2	10	2700

FOOD FREEZE-DRYING MACHINE (CONTACT)

PRODUCT INTRODUCTION

The FZG series freeze-drying machine is used for standardized production and is suitable for processing various food products, solid beverages, additives, feed, Chinese herbal medicine, and industrial raw materials. It adopts high-quality materials and imported components widely accepted in the industry. Additionally, it employs advanced manufacturing processes.

SCOPE OF USE

This equipment is applicable to the freeze-drying of various products, including fruits and vegetables, meat, seafood, health products, soup ingredients, instant solid beverages, convenience foods, bio-products, concentrated extracts, fresh Chinese herbs, feed, and pet food.

Freeze-dried fruits

Prefabricated dishes

Freeze-dried flowers

Freeze-dried pet snacks

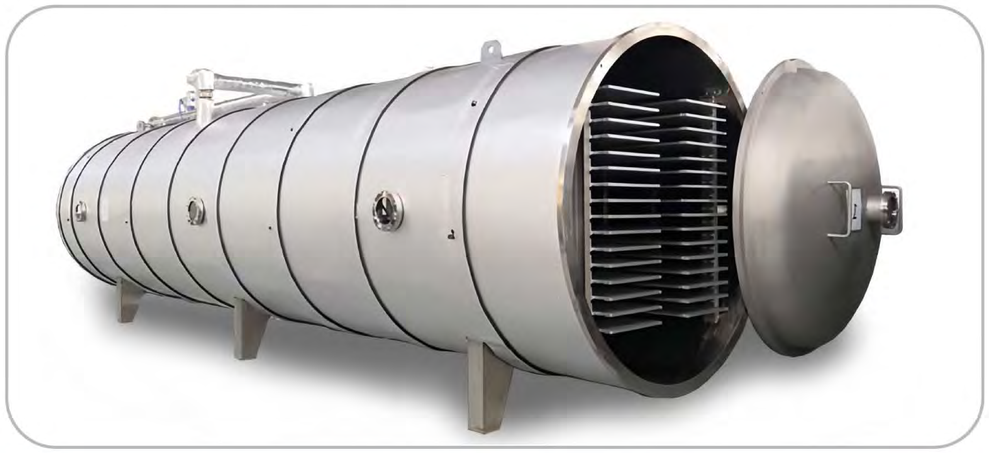
PERFORMANCE CHARACTERISTICS

- The freeze-drying chamber and shelves are made of 304-grade stainless steel with a polished interior.
- The unit has an integrated design with an observation window for easy monitoring.
- The refrigeration system uses international components for strong and reliable performance.
- The vacuum system includes high-quality vacuum pumps with comprehensive protection measures.
- Pneumatic valves control the pipeline system, ensuring high automation.
- The circulation heating system uses high and low-temperature thermal oil for stability, with adjustable temperature control and various protective features.
- It employs a PLC control system for both automatic and manual operation, allowing remote monitoring.

PRODUCT PARAMETERS

Type	Condensation temperature(℃)	temperature range of the shelves	Processing capacity(Kg)	Freeze-drying area(m²)	Water-catching capacity(Kg/24h)	Power(KW)
TF-FZG-5	<-65	-50℃to+80℃	50	5.67	100	21.5
TF-FZG-10			100	10.5	200	45
TF-FZG-15	<-60	-45℃to+80℃	150	15.74	300	71
TF-FZG-20			200	21	400	86
TF-FZG-30			300	32.46	550	120
TF-FZG-50			500	50.22	750	160

FOOD FREEZE-DRYING MACHINE(RADIATION TYPE)



PRODUCT INTRODUCTION

The FZG series freeze-drying machine is used for standardized production and is suitable for processing various food products, solid beverages, additives, feed, Chinese herbal medicine, and industrial raw materials. It adopts high-quality materials and imported components widely accepted in the industry. Additionally, it employs advanced manufacturing processes.

SCOPE OF USE

This equipment is applicable to the freeze-drying of various products, including fruits and vegetables, meat, seafood, health products, soup ingredients, instant solid beverages, convenience foods, bio-products, concentrated extracts, fresh Chinese herbs, feed, and pet food.

Freeze-dried fruits

Freeze-dried noodles

Freeze-dried milk powder

Freeze-dried fish

PERFORMANCE CHARACTERISTICS

- The large-scale radiation-type food freeze-drying machine employs quick freezing and radiation heat transfer to achieve efficient freeze-drying, thereby improving work efficiency.
- With its high-capacity freeze-drying chamber, it can process large quantities of food materials simultaneously, ensuring even distribution during freeze-drying.
- The efficient vacuum system accelerates dehydration and enhances the freeze-drying efficiency.
- Precise temperature control, along with the NETSCADA data acquisition and monitoring system, ensures temperature stability and consistency during the freeze-drying process.
- Equipped with an advanced refrigeration system, it operates steadily and efficiently.
- The automated control system enables comprehensive monitoring and operational control.
- It features multiple shelves and aluminum alloy trays to accommodate various food materials.
- Safety and reliability are prioritized with alarm protection measures in place, ensuring the integrity of core components.
- The PLC control system allows for both automatic and manual control modes, with remote operation and monitoring capabilities.

PRODUCT PARAMETERS

Type	Cold trap operating temperature(℃)	Effective area(m²)	Water-catching capacity(Kg)	Quick-freeze storage temperature(℃)	Vacuum degree (Pa)
TF-FZG-20Ra	≤-65	19.10	300	≤-40	≤10
TF-FZG-30Ra		28.64	450		
TF-FZG-50Ra		49.94	750		
TF-FZG-75Ra		79.20	1125		
TF-FZG-100Ra		99.89	1500		
TF-FZG-125Ra		124.86	1875		
TF-FZG-150Ra		157.08	2250		
TF-FZG-200Ra		203.65	3000		

PILOT TYPE FREEZE-DRYING MACHINE

PRODUCT INTRODUCTION

SFD Medium-sized Freeze-Drying Machine simplifies the cumbersome operation of small freeze-dryers, prevents material contamination, and accelerates the sublimation of material moisture. This series of models features shelf heating and programmable functions, allowing users to view the freeze-drying curve and conveniently observe the material's freeze-drying process.

SCOPE OF USE

It is applicable in various industrial processing applications such as food dehydration, soup ingredients, vegetables, convenience foods, instant products, meats, etc. It is ideal for purchase, testing, research, and development purposes.

Freeze-Dried Eye Mask

Freeze-Dried New Materials

Freeze-Dried Cordyceps

Freeze-Dried Gynostemma Pentaphyllum

PERFORMANCE CHARACTERISTICS

- In-site pre-freeze drying, fully automatic operation.
- Special thermal oil for efficient heat conduction, high temperature control precision, shelf temperature difference ≤1°C, achieving uniform drying effect.
- 304 stainless steel square trays, resistant to deformation and corrosion, easy to clean.
- Touch screen operation, PLC control, can set startup password, display drying curves.
- Equipped with an inflation valve, capable of introducing inert gas during drying. the drying chamber features a high-transparency colorless transparent organic glass door, providing a clear observation of material changes during operation.
- Adjustable temperature and vacuum regulation functions, controllable production process, capable of storing multiple programs, each with 36 segments. the
- freeze-drying machine can modify program parameters during operation and record vacuum drying curves and data online.

PRODUCT PARAMETERS

Type		Condensation temperature(℃)	Temperature range of the shelves	Processing capacity(Kg)	Freeze-drying area(㎡)	Water-catching capacity(Kg)	Power(Kw)
TF-SFD-2	Standard type	<-70	-50℃to+70℃	2	0.2	4	4.3
	Pressure Cap Type			2	0.2	4	5.1
TF-SFD-3	Standard type		-50℃to+80℃	3	0.3	5	5.4
	Pressure Cap Type			3	0.3	5	6.2
TF-SFD-5	Standard type		-50℃to+80℃	5	0.5	8	5.4
	Pressure Cap Type			5	0.5	8	6.2
TF-SFD-10	Standard type		-50℃to+70℃	10	1	15	7.3
	Pressure Cap Type			10	1	15	8

PHARMACEUTICAL FREEZE-DRYING MACHINE

PRODUCT INTRODUCTION

LYO series freeze-drying machines are designed for standardized production, catering to the processing and production of various biological products, enzyme preparations, additives, cosmetics, food, traditional Chinese medicine, and industrial materials. The machines are equipped with high-quality materials and major components widely accepted in the industry, and they also adopt advanced manufacturing processes, complying with CGMP and FDA standards.

SCOPE OF USE

This equipment is suitable for freeze-drying various biological products, test preparations, fermentation extracts, enzyme preparations, additives, probiotics, dairy products, cosmetics, food products, health supplements, instant solid beverages, traditional Chinese medicine decoctions, and other products.

Freeze-Dried Bird's Nest

Freeze-Dried Cosmetics

Freeze-Dried Probiotics

Freeze-Dried Chinese Medicinal Herbs

PERFORMANCE CHARACTERISTICS

- The equipment's freeze-drying chamber and shelves are made of 304 or 316-grade stainless steel with a polished interior surface.
- Uniform heating during partition manufacturing prevents stress from independent welding, ensuring excellent shelf flatness.
- Low-viscosity silicone oil serves as the thermal medium, ensuring uniform temperature even at extreme lows.
- The design includes an integrated cold trap with an observation window and lighting for easy monitoring. The cold trap water-catching coil is made of clean stainless steel.
- Imported components in the refrigeration system employ ultra-low temperature technology for strong cooling capacity and fast cooling.
- High-quality vacuum pumps with comprehensive protection measures are used in the vacuum system. Pneumatic valves control the pipeline and valve systems, ensuring high automation. The temperature control curve is adjustable with built-in safeguards.
- The equipment can be equipped with an intermediate valve for pressure-rise testing and endpoint determination, and it offers optional features like shelf lifting, CIP online cleaning, and SIP online sterilization.
- The production adheres to ISO9001 quality management system, GMP, and FDA requirements.
- The PLC control system allows automatic and manual control modes, and it supports remote operation and monitoring.
- Compliance with FDA Standard 21 CFR Part 11 requirements for electronic records and signatures.
- 4Q certification documents are available upon request.

PRODUCT PARAMETERS

Type	Condensation temperature(℃)	Vacuum degree (Pa)	Bulk Solution Volume(L)	Freeze-drying area(m²)	Water-catching capacity(Kg)	Power(KW)
TF-LYO-0.5	-80	≤1	10	0.54	10	7
TF-LYO-1	-75		20	1.08	20	11
TF-LYO-2			40	2.16	40	15
TF-LYO-3			60	3.24	60	23.5
TF-LYO-5			100	5.4	100	36
TF-LYO-7.5			150	7.56	150	36
TF-LYO-10			200	10.8	200	60
TF-LYO-15			300	15.84	300	75.7
TF-LYO-20			400	20.18	400	90
TF-LYO-30	-65		600	29.99	600	158
TF-LYO-40			800	41.86	800	211
TF-LYO-50			900	49.6	900	235

Freeze drying solution

Raw Material Processing:
Sorting, cleaning, peeling, slicing, quick freezing, freeze-drying, sorting, and packaging.

Solid Beverage Processing:
Crushing, pulping, extraction, fermentation, concentration, sterilization, quick freezing, freeze-drying, pulverization, and packaging.

PACKAGING
TEST EQUIPMENT

HYLEC

ABOUT HYLEC CONTROLS

Test and measurement instruments and devices are integral to the effective monitoring, maintenance and operation of industrial systems and processes. Advances in smart sensor technologies are transforming devices and what they can bring to operation management, enhancing the collection and analysis of data for effective decision making.

Hylec Controls is an Australian owned and managed company based in Auburn, Sydney. Founded in 1979, Hylec Controls is dedicated to providing a wide range of controlled test systems across a broad variety of industries. We employ a number of engineers and technicians who carry out commissioning, installation, and repair work as well as regular maintenance to supplied equipment.

We focus on providing our clients with more than just a testing device, but also a solution. Our solution managers seek to provide you the most information possible to build you a final quote. Please contact our team of engineers to discuss the solution and your project.