BioLAB

PRODUCT CATALOG

PILOT-SCALE FREEZE DRYER

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PILOT-SCALE FREEZE DRYER BFR1E1 BFR1E2 BFR1E3

PILOT FREEZE DRYER

SPECIFICATIONS

Model	BFR1E1	BFR1E2	BFR1E3
Shelf Specification			
-Shelf size (mm)	300 x 400	300 x 400 (Top stopper type 250 x 450)	
-No. of Shelves	1	2 + 1	3 + 1
-Shelf Temperature Control (°C)	-50 °C to 60 °C		
-Lowest Shelf temperature (50/60 Hz, °C)	≤ -50 °C		
-Temperature Control Accuracy	±0.5 °C		
-Shelf Temperature Cooling rate (20 to -40 °C)	≤ 60 min		
-Shelves Temperature uniformity (°C)	±1 °C		
-Shelves distance	60 mm		
-Material of Shelves	SS304 (SS316 optional)		
-Vials load capacity (Ø16 mm)	450 pcs (Top stopper type is 840)	900 pcs (Top stopper type is 840)	1350 pcs (Top stopper type is 1200)
-Vials load capacity (Ø22 mm)	234 pcs (Top stopper type is 840)	468 pcs (Top stopper type is 440)	702 pcs (Top stopper type is 660)
Condenser specification			
-Condenser Lowest Temperature (°C)	≤ -65 °C		
-Condenser Temperature Cooling rate (20 to -40 °C)	≤ 30 min		
-Ice capacity in 24 h (L)	2 L		4 L
-Max ice condenser (L)	2 L		6 L
-Condenser surface	-		
-Condenser structure	Stainless Coils		
Refrigeration System			
-Compressor	1 pc Tecumseh/Embraco	1 pc Tecumseh / Embraco	1 pc Tecumseh
-Compressor power	1.5 HP		2 HP
-Cooling	Air cooling		
-Shelves Cooling	Silicon oil recycling (5cs)		
-Condenser cooling	Direct cooling		
Vacuum System			
-Vacuum Gauge	ZJ54T		
-Optional CM gauge	CM-Pirani pressure difference used to determine freeze-drying end point	CM-Pirani pressure difference to determine freeze-drying end point	

-Lowest Pressure	< 1 Pa		
-Vacuum control range	1 to 50 Pa		
-Vacuum Control mode	Gas permeation: solenoid valve + micro valve; automatic program control		
-Vacuum pump	DRV 10 (10 m³/h) with Mist Filter		
Recycling/Heating & Control			
-Recycling pump	SJ stainless magnetic pump		
-Heater	0.15 kW x2 (one main and one backup)	0.2 kW x2 (one main and one backup)	0.3 kW x2 (one main and one backup)
-Heater protection	Over heater protecter		
-Top stopper system (optional)	for loading vials	For loading vials	
Control system			
-PLC	PLC		
-Touch display	7 inch touch display		
-Control	Auto / Semi Auto / Manually		
Machine Equipment			
-Rated power	Required 1.8 kW (50/60 Hz, 220-240 V)	Required 2.6 kW (50/60 Hz, 220-240 V)	
-Machine structure	Integrated (vacuum pump inside the machine)		
-Size (mm)	1020x810x790 mm + Vacuum pump (690x270x290 mm)	(Approx) W880 x D700 x H1220 (vacuum pump inside)	(Appro) W880 x D700 x H1220 (vacuum pump inside)
-Weight (kg)	(Approx)170 kg	(Approx) 260 kg	(Appro) 300 kg
Alt Name	Pilot Freeze Dryer		

BFR1E1

BFR1E1

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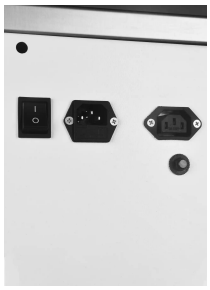
BFR1E1



BFR1E1

BFR1E1

BFR1E2

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BFR1E3


BFR1E3


BFR1E3


BFR1E3

PILOT-SCALE FREEZE DRYER BFR1K1 BFR1K2

FREEZE DRYER

Command OS2.1 control system was developed to meet the lyophilization requirements of today's pharmaceutical and biotechnology applications.

The system packs the highest level process_x0002_control and flexibility into a software package that is as easy to use as it is multi-functional.

The SCADA system solution to deliver superior functionality, as well as faster, more intelligent control of the freeze-drying process and related functions.

SPECIFICATIONS

Model	BFR1K1	BFR1K2
Chamber	AISI 304L /316L	
Shelves	AISI 304L /316L	
Shelf Size	300 x 400	
Chamber Door	Acrylic or stainless door	
Door lock system with safe bolt		
Product sensors	Pt-100	
Temperature sensors(thermal fluid)	Pt-100	
Finish	Ra≤0.4μm	
Level	0.5mm/m	
Shelves temperature Min	< -60°C	
Shelves temperature Max	+65°C	
Shelves temperature uniformity	±1°C(after balance)	
Spacing	100mm (Top stopper type is 80mm)	
Chamber type	Rectangular	
Insulation	B1 Cotton insulation	
Open direction	Left or right	
Sealing strips for doors	Silicon rubber	

Condenser (with coiled pipe)		
- Condenser	AISI 304 ,316 optional	
- Condenser coiled pipe	Coil inside or round type(coil outside)	
- Temperature sensors(condenser)	Pt-100	
- Coiled temperature Min	≤-85℃	
- ice capacity in 24hour	4kg	
- Condenser frosting capacity	Max 6kg / batch	Max 6kg/batch
- Condenser type	round	
Refrigeration system		
- Compressor model and number	1HP Embraco	1.5HP Embraco
- Refrigerant	R507+R508B	
- Oil separator	Emerson / similar type	
- Automatic protective device for pressure	DANFOSS	
- Pressure meter	REFCO or similar type	
- Expansion valve	DANFOSS	
- Shelf cooling time (without load)	+20 ~ -40℃ ≤ 60 minutes	
- Condenser cooling time(without load)	+20 ~ -40℃ ≤ 30 minutes	
Vacuum system		
- Vacuum pump	DRV10 (10 m^3/h)	DRV16 (16 m³/h)
- Isolation valve of pump well	Electric valve	
- Vacuum gauge	Posifa	
- Final vacuum	<= 1 Pa	≤1 Pa
- Evacuation time	From atm to 20 Pa ≤ 30 min	
- Leakage rate	5x10^-3 Pa·m^3/sec	5x10^-3 Pa·m³/sec
Circulation system		
- Circulation pump	Grundfos	
- Thermal fluid	5cs, USA Dowcorning Silicon oil (low viscosity)	
- Heater	500w	
- Plate heat exchanger		
- Temperature sensors(thermal fluid)	Pt-100	
- Heating rate	1℃/min	
Electric control system		
- Electric standard	IEEE	
- PLC	Siemens S7-200	
- Breaker	schneider	
- AC contactor	schneider	
- Control type	Manual and automatic	
Utility list		
- Electricity-total electrical load	4Kw (380V, 50Hz, 3Phase) or 220V-240V 3 phase or 110V 220v single phase	4.5Kw (380V, 50Hz, 3Phase) or 220V-240V 3 phase or 110V 220v single phase
The equipment's main technique parameter		
- Machine construction	Wall mounted, GMP type	
- Weight (approx)	310 kg	340 kg
- Gross weight (approx)	380 kg	420kg
- Package size	850 x 1450 x 1480 mm	
- Capacity of raw material for freeze drying (suggestive value)	2.4 kg/batch	3.6 kg/batch

Alt Name	Freeze Dryer

PILOT-SCALE FREEZE DRYER BFR1L1

FREEZE DRYER

Command OS2.1 control system was developed to meet the lyophilization requirements of today's pharmaceutical and biotechnology applications.

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The SCADA system solution to deliver superior functionality, as well as faster, more intelligent control of the freeze-drying process and related functions.

SPECIFICATIONS

Model	BFR1L1
Chamber	AISI 304L /316L
Shelves	AISI 304L /316L
Shelf Size	350 x 400
Chamber Door	Acrylic or stainless door
Door lock system with safe bolt	1set
Product sensors	Pt-100
Temperature sensors(thermal fluid)	Pt-100
Finish	Ra≤0.4μm
Level	0.5mm/m
Shelves temperature Min	< -60°C
Shelves temperature Max	+65°C
Shelves temperature uniformity	±1°C(after balance)
Spacing	100mm (Top stopper type is 80mm)
Chamber type	Rectangular
Insulation	B1 Cotton insulation
Open direction	Left or right
Condenser (with coiled pipe)	
- Condenser	AISI 304, 316 optional
- Condenser coiled pipe	Coil inside or round type (coil outside)
- Temperature sensors(condenser)	Pt-100
- Coiled temperature Min	≤ -85°C
- ice capacity in 24hour	8kg
- Condenser frosting capacity	Max 10kg/batch

- Condenser type	round
Refrigeration system	
- Compressor model and number	2HP Embraco
- Refrigerant	R507+R508B
- Oil separator	Emerson / similar type
- Automatic protective device for pressure	DANFOSS
- Pressure meter	REFCO or similar type
- Expansion valve	DANFOSS
- Shelf cooling time (without load)	+20 ~ -40℃ ≤ 60 minutes
- Condenser cooling time(without load)	+20 ~ -40℃ ≤ 30 minutes
Vacuum system	
- Vacuum pump	DRV24 (24m³/h)
- Isolation valve of pump well	Electric valve
- Vacuum gauge	Posifa
- Final vacuum	≤1 Pa
- Evacuation time	From atm to 20 Pa ≤ 30 min
- Leakage rate	5x10^-3 Pa·m³/sec
Circulation system	
- Circulation pump	Grundfos
- Thermal fluid	5cs, USA Dowcorning Silicon oil (low viscosity)
- Heater	500w
- Plate heat exchanger	
- Temperature sensors(thermal fluid)	Pt-100
- Heating rate	1℃/min
Electric control system	
- Electric standard	IEEE
- PLC	Siemens S7-200
- Breaker	schneider
- AC contactor	schneider
- Control type	Manual and automatic
Utility list	
- Electricity-total electrical load	5.5Kw (380V, 50Hz, 3Phase) or 220V-240V 3 phaseor
The equipment's main technique parameter	
- Machine construction	Wall mounted ,GMP type
- Weight (approx)	480 kg
- Gross weight (approx)	580kg
- Package size	850 x 1450 x 1980 mm
- Capacity of raw material for freeze drying (suggestive value)	5 kg/batch
Alt Name	Freeze Dryer

PILOT-SCALE FREEZE DRYER BFH1D1 TO BFH1D4

PILOT-SCALE FREEZE DRYER

Pilot-type freeze dryer completely simulates the technical requirements of the industrial freeze dryer, with a compact and reasonable design, a large redundancy range, and conforms to GMP and FDA standards. The ice condensation capacity is 4~18kg, and the WRL controller and liquid temperature control shelf are adopted, so that the process of pre-freezing and freeze-drying can be precisely controlled on the main machine, and the process results are quite comparable with the production machine. In addition to supporting the eutectic point test system, pressure rise and pressure comparison method to determine the freeze-drying end point and freeze-drying curve recording software, Yingtai pilot-type freeze dryer can also be equipped with engineering WRL control software to directly Graphical computer control the freeze-drying process. It can be configured with H202 sterilization and high-pressure steam sterilization or integrated glove box system, which can be used for clean room operation through the wall. The cold trap and freeze-drying chamber are all designed with 316L stainless steel to ensure the cleanliness of the chamber and good ultimate vacuum and vacuum leakage rate to the greatest extent.

Pilot-type freeze dryer can be used for freeze drying of bacteria, viruses, plasma, serum components, antibodies, serum and vaccines, pharmaceutical products such as chloramphenicol, streptomycin, vitamins, enzymes, plant extracts for biochemical experiments, etc. And research and development.

Control System:

1. Control: Automatic/Manual

Can store at least 100 independent freeze-drying programs, each program contains 32 program segments(Can be customized according to user needs), each program segment corresponds to a processing stage (Pre-freezing, main drying, post-drying) and include the following segment values: Cycles, shelf temperature, vacuum and safety pressure for the heating unit.

All The equipment can be recorded in real time and the corresponding freeze-drying curves and data tables can be generated after the end of the process. The records of all data and curves comply with the corresponding regulations and standards.

It has hierarchical management authority, hierarchical management allocation aut

SPECIFICATIONS

Model	BFH1D1	BFH1D2	BFH1D3	BFH1D4
Freeze-dried area	0.256 m²	0.512 m²	1.008 m²	1.512 m²
Ice condenser capacity	4kg	9kg	12kg	18kg
Shelf temperature	-60℃~+80℃			-60℃~+70℃
Ice condenser temperature	-86℃			
Cold trap volume	9L	15L	18L	30L
Chamber type	Single		Double	
Max number of shelves	2	3+1	6+1	12+1
Shelf size	325*400mm	340*500mm		
Shelf spacing	100mm (adjustable)			
Number of penicillin bottlessmm)	470	1175	1880	2820
Shelf heating and cooling method	Thermal conducting silicone oil medium(temperature resistance: -100~+600 degree C)			
Chamber and shelf surface	Atomization and electrolysis surface treatment, no dead corner residue			
Pipeline diameter	-	Φ89mm		
External valve port	6/	12/	18/	-
Equipment power	3.8kw	5.5kw	6.5kw	8kw
Equipment size	700*588*1600mm	1030*700*1630mm	1030*700*1850mm	1500*850*1900mm
Capping mode	Electric/No capping	Hydraulic system capping device/No capping		No capping
Suitable clean room	Suitable			

Vacuum sensor type	Pirani Vacuum sensor/capacitive vacuum sensor		
Remote control and alarm	Support 2G/4G/GSM/Wi-Fi		
Terminal judgment function	Pressure contrast method	Pressure test/pressure contrast method	
Freeze dryer front door cover	Stainless steel/Plexiglass		Stainless Steel
Inert gas filling	(Optional) Sufficient amount and time for the program to run itself		
User function customization	Can be customized and modified according to user needs		
Sterilization method	H_2O_2/steam sterilization		
Voltage(V/Hz)	220V, 50/60Hz	380V	
Alt Name	Pilot-scale Freeze Dryer		

BFH1D1

BFH1D1

BFH1D2 BFH1D3 BFH1D4

BFH1D2 BFH1D3 BFH1D4

FEATURES

Control System:

1. Control: Automatic/Manual

Can store at least 100 independent freeze-drying programs, each program contains 32 program segments(Can be customized according to user needs), each program segment corresponds to a processing stage (Pre-freezing, main drying, post-drying) and include the following segment values: Cycles, shelf temperature, vacuum and safety pressure for the heating unit.

All The equipment can be recorded in real time and the corresponding freeze-drying curves and data tables can be generated after the end of the process. The records of all data and curves comply with the corresponding regulations and standards.

It has hierarchical management authority, hierarchical management allocation authority and usage process tracking authority.

2. Remote System:

Fully support 2G/4G/GSM/Wi-Fi various connection modes.

Users can remotely view all data on the device and operate it.

Technicians can remotely perform maintenance and fault detection on equip- ment, and can remotely guide and train users.

Can remotely upgrade and change the system of the equipment.

Working Chamber:

Double-chamber stainless steel system, optional Teflon anti-corrosion treatment.

Material: stainless steel 316L; Each layer is equipped with a standard sample temperature probe.

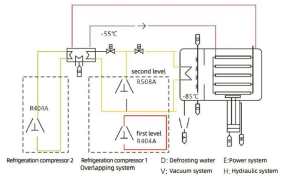
Built-in condenser, high condensation efficiency.

Plexiglass cold trap window and stainless steel door cover(optional), can observe the ice formation in the cold trap. Applicable to clean room. Refrigerant reverse hot gas defrosting.

Layer temperature:<+1℃; Layer flatness: <+0.5mm /m square.

Vacuum System:
Vacuum pump: Domestic high-reliability two-stage rotary vane vacuum pump. Optional German Welch corrosion-resistant, anti-oil backflow vacuum pump. The vacuum pump can be selected according to user requirements.
Pump rate: 9m3/h~62m3/h, multiple specifications are optional, the ultimate vacuum can reach 2x10~5 x 10 mbr, and the oil mist filter is standard configuration.
The vacuum pipelines are all high-vacuum stainless steel vacuum tubes, which can effectively prevent vacuum leakage and corrosion.
Double anti-oil return device completely eliminates the damage and pollution caused by the oil return of the vacuum pump pipeline to the equipment and samples.
Automatic backfill air device, the system has a built-in High Efficiency Particulate Air(HEPA) filter to ensure the complete cleanliness of backfill air.
The vacuum stabilization system can stabilize the vacuum degree of the freeze-drying process through the micro-pass vacuum control valve to ensure that the samples will not be affected by excessive fluctuations in the vacuum degree.
Condensed liquid collection and discharge system, automatically completes the collection and discharge of condensed liquid after freeze-drying.
Pirani Vacuum sensor/capacitive vacuum sensor.

Refrigeration System:
Dual compressors, Tecumseh special compressors, air cooling(water cooling system is optional)
Refrigeration method: Cascade refrigeration method, high cooling efficiency, good reliability, using CFC-Free environmentally friendly refrigerant.
Silicone oil conducts heat, with uniform temperature and accuracy up to 0.1℃. Silicone oil has a wide temperature range, up to -100℃~+600℃



Note: "/" optional. Pilot models can be customized according to user needs

Biolab Scientific Ltd.
Trillium Executive Center, East Tower, 675 Cochrane Dr, Markham, Ontario L3R 0B8, Canada
Email: info@biolabscientific.com | Website: www.biolabscientific.com