

Seltis

Solution For Vacuum Freeze-drying System



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We provide Simple and economical means of freeze drying for stabilization of living material and preservation of fragile substances. Lyophilization is a manufacturing step often used to gently stabilize pharmaceutical, biopharmaceutical and food products and intermediates. Lyophilization is based on the principle of removing the moisture from the materials by sublimation under the unique vacuum conditions.

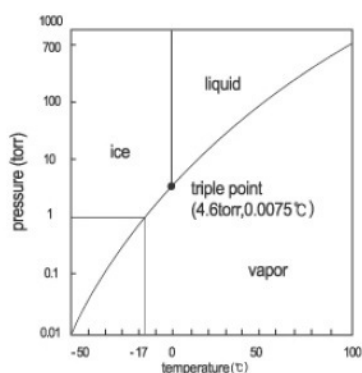
Ice and vapour are in equilibrium at the pressure and the temperature below the triple point. Under these conditions any heat applied to the ice is used as the sublimation latent heat and the frozen materials get gradually sublimated beginning with its surface as its temperature is maintained constantly in response to the applied outside pressure. This phenomenon is similar to the boiling of gas or liquid in equilibrium at above normal temperature. The sublimation heat is basically the sum of the vaporization latent heat at above normal temperature, solidification latent heat and the sensible heat from the temperature changes.

Since the moisture inside the material is removed in a frozen state at such a low temperature in vacuum, the changes of physical and chemical properties of the materials would be minimized and the materials can be restored to its original state by simply adding water.

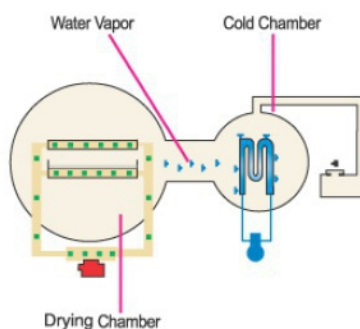
Advantages of Lyophilization

- Preserving the natural cell structure without shrinkage, density change or surface hardening.
- Minimize the change of taste, smell and colour.
- Minimize the loss of nutrients such as protein and vitamins.
- Good restoring ability to the original state of the materials by adding water.
- Possible long time storage at the room temperature due to low final moisture content of the dried materials.

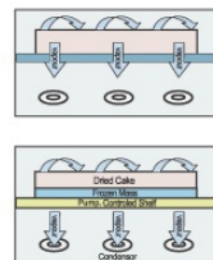
Triple point of water



Freeze drying system



Freeze drying diagram



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Solution For Vacuum Freeze-drying System

Various Types capacity and
combination of Seltis
Freeze Dryer
-55°C ~ -110°C / 4L-24L Capacity



Construction

- Compact freeze Dryers for the laboratory.
- Use of Anticorrosion 316L Grade Stainless steel interior for condenser coil, condenser chamber and high impact coated finish outer.
- High Density Insulation material to minimize cold air loss.
- Equipped with drain Valve.
- Outer Cooling coil system for easy cleaning of chamber.
- Silent operation with Low noise level less than 50dba.
- Inbuilt Vacuum pump protection from moisture.
- Performance guaranteed for hard Condition resistant test +32°C.
- Caster wheels with stopper for easy movement.
- Back filling valve for inerting air and gas.

Cooling System

- Average evacuation time of 20-40 minutes to reach acceptable vacuum level.
- CFC & HCFC free energy efficient refrigeration system.
- Specially designed air cooled condenser and aero dynamic fan.
- LBP Hermetic Compressor with delay start function to avoid any compressor damage.
- Two stage cascade refrigeration system.
- Audible and visual alarm system for power failure or any other irregularities relating to the operations.
- Vacuum control for setting and maintaining desired ultimate vacuum.

One Touch Operation Microprocessor control

- Microprocessor Touch Screen Control LCD displays condenser temperature, time, sample temperature, vacuum and various other operating and set parameters with graphs presentation on the control panel with USB port.
- Manual and Automatic Control operations.
- Temperature measuring Sensor Platinum PT-100Ω(Class A 0.15 grade).
- Vacuum break valve to prevent back flow of contaminated oil or gas.
- Temperature Setting functions for auto start of vacuum pump once cold trap reaches -40°C temperature.
- Standby and run mode operation provide complete information relating to system and vacuum pump operation duration and service alert.

Optional Accessories System & others

- Chemical resistant two Stage Rotary Vane Vacuum Pump(100-500LPM) with Ultimate pressure (2×10^{-3} mbar) or better.
- Chemical resistant oil free vacuum pump (100-150 LPM)
- End point determination option.
- PC Remote Monitoring system
- Real time monitoring.
- Heating & non heating shelves.
- Vacuum pump pressure anti return device.
- Pirani Gauge Vacuum Sensor.
- PTFE Coated SS coil.
- Ethernet connection.
- Product Sensor.
- Electromagnetic Vacuum Control Valve.

FREEZE DRYER BENCH TOP AND FLOOR TYPE

Model	ST-5502 / ST-8502 / ST-11002	ST-5503 / ST-8503 / ST-11003	ST-8506 / ST-11006	ST-8512 / ST-11012
Cold Trap Temperature	-55°C / -85°C / -110°C	-55°C / -85°C / -110°C	-85°C / -110°C	-85°C / -110°C
Total Capacity	4L	6L	12L	24L
Ice Removal Capacity/24hrs.	2kg ~ 3kg	3.5kg ~ 4.5kg	6kg	10kg ~ 12kg
Compressor	1HP x 1/2 / 2	1HP x 1/2 / 2	1HP x 2	1HP x 2
Controller	Micro Processor LCD Touch Screen			
Electrical	AC220V1ph(50Hz)			
Defrost	Auto (Hot Gas)			
Dimension(mm)	W350xD600xH550/W530xD470xH730	W430xD640xH600/W570xD490xH730	W620xD550xH730	W680xD580xH730
Weight (kg)	70 / 90 kg	80 / 110 kg	130 kg	180 kg

(Design and Dimensions are subject to change without notice for further improvement)

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Various Types capacity and
combination of Seltis
Freeze Dryer
-56°C / 6L-10L Capacity



Construction

- Use of Anticorrosion 316L Grade Stainless steel for trap chamber, Cold trap condenser and high impact coated finish outer frame.
- High Density Insulation material to minimize cold air loss.
- Equipped with drain Valve.
- Silent operation with Low noise level less than 50dba.
- Vacuum pump protection from moisture.

Cooling System

- Average evacuation time of 20-40 minutes to reach acceptable vacuum level.
- CFC & HCFC free energy efficient refrigeration system.
- Specially designed air cooled condenser and aero dynamic fan.
- LBP Hermetic Compressor with delay start function to avoid any compressor damage.
- Performance guaranteed for hard Condition resistant test +32°C.
- Temperature Setting functions for auto start of vacuum pump once cold trap reaches -40°C temperature.

One Touch Operation Microprocessor control

- Microprocessor Touch Screen Control LCD System displays digital temperature, vacuum and various other parameters with graphs presentation on the control panel.
- Manual and Automatic Control operations.
- Alarm system for power failure or any other irregularities relating to the operations.
- Temperature measuring Sensor Platinum PT-100Ω(Class A 0.15 grade).
- Auto vacuum release to prevent back flow of contaminated oil or gas.

Optional Accessories System & others

- Chemical resistant two Stage Rotary Vane Vacuum Pump(100-500LPM) with Ultimate pressure (2x10⁻³mbar) or better.
- End point determination option.
- Option for Vacuum control for setting and maintaining desired ultimate vacuum.
- PC Remote Monitoring system
- Real time monitoring.
- Vacuum pump pressure anti return device.
- Stoppering system.
- Product Sensor.

FOOD FREEZE DRYER

Model	ST-5FD	ST-10FD
Cold Trap Temperature	-56°C	-56°C
Total Capacity	8Kg	12kg
Material Processing capacity	6L (liquid filling 10mm)	10L (liquid filling 10mm)
Shelf Size/Nos.	600x225mm(5+1)	920x225mm(5+1)
Tray Size	600x225x25mm	460x220x25mm
Shelf Space	50mm	
Product Sensor	1	
Controller	Microprocessor PLC LCD Touch Screen Control with 12 recipes & USB Data Storage	
Drying Chamber	Square Type SS 316	
Door	Transparent Acrylic Door	
Compressor	Hermetic Sealed Secop	
Defrost	Electric defrosting	
Power	220Volt 50Hz (2.4Kw)	220Volt 50Hz (2.8Kw)
Dimensions (L*W*H)	630x910x1040mm	1235x630x1180mm
Weight	150kg	180Kg

(Design and Dimensions are subject to change without notice for further improvement)

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Various Types capacity and
combination of Seltis
Freeze Dryer
-55°C ~ -85°C / 4L-8L Capacity



Construction

- Compact freeze Dryers for the laboratory.
- Use of Anticorrosion 316L Grade Stainless steel interior for condenser coil, condenser chamber and high impact coated finish outer.
- High Density Insulation material to minimize cold air loss.
- Equipped with drain Valve.
- Outer Cooling coil system for easy cleaning of chamber.
- Silent operation with Low noise level less than 50dba.
- Inbuilt Vacuum pump protection from moisture.
- Performance guaranteed for hard Condition resistant test +32°C.
- Caster wheels with stopper for easy movement.

Cooling System

- Average evacuation time of 20-40 minutes to reach acceptable vacuum level.
- CFC & HCFC free energy efficient refrigeration system.
- Specially designed air cooled condenser and aero dynamic fan.
- LBP Hermetic Compressor with delay start function to avoid any compressor damage.
- Performance guaranteed for hard Condition resistant test +32°C.
- Temperature Setting functions for auto start of vacuum pump once cold trap reaches -40°C temperature.

One Touch Operation Microprocessor control

- Microprocessor Touch Screen Control LCD System displays digital temperature, vacuum and various other parameters with graphs presentation on the control panel.
- Manual and Automatic Control operations.
- Alarm system for power failure or any other irregularities relating to the operations.
- Temperature measuring Sensor Platinum PT-100Ω(Class A 0.15 grade).
- Auto vacuum release to prevent back flow of contaminated oil or gas.

Optional Accessories System & others

- Chemical Resistant two Stage Rotary Vane Vacuum Pump(100-500LPM) with Ultimate pressure (2x10⁻³mbar) or better.
- Chemical Resistant oil free Vacuum pump (100-150LPM)
- End point determination option.
- Option for Vacuum control for setting and maintaining desired ultimate vacuum.
- PC Remote Monitoring system
- Real time monitoring.
- Vacuum pump pressure anti return device.
- Pneumatic stoppering system
- Back filling valve for inerting air and gas.

PILOT SERIES LABORATORY SCALE BENCH TOP AND FLOOR TYPE

Model	ST-5504PL	ST-8504PL	ST-5506PL	ST-8506PL	ST-5508PL	ST-8508PL
Cold Trap Temperature	-55°C	-85°C	-55°C	-85°C	-55°C	-85°C
Total Capacity	4L		6L		8L	
Ice Removal Capacity/24hrs.	2L		4L		5L	
Shelf Size/Nos.	300X400mm(2nos)		300X400mm(3nos)		300X400mm(4nos)	
Pre-freezing Temperature	-75°C					
Product Sensor	1		2		3	
Shelf Temperature	-55°C to +60°C (± 2°C)					
Shelf Cooling System	Silicone Oil					
Controller	Microprocessor PLC LCD Touch Screen with 20 Program, 36 Segment & USB Data					
Defrost	Storage Auto /Hot Gas					
Compressor	1hpx1	3/4x2	1.5hpx1	1hpx2	2hpx1	1.5hpx2
Power	220 Volt 50hz Single Phase					
Shelf Space	50mm to 160mm					
Drying Chamber	Square Type SS316					
Door	Transparent Acrylic Door for easy view					
Dimensions	W815xD650xH1200mm		W900xD655xH1210mm		W900xD675xH1230mm	
Vials Capacity 2ml (16mm)	600		1000		1400	
Vial Capacity 5ml (18mm)	500		800		1000	

(Design and Dimensions are subject to change without notice for further improvement)

Solution For Vacuum Freeze-drying System

Construction

- Use of Anticorrosion 316L Grade Stainless Steel for trap chamber, Cold trap condenser and high impact coated finish outer frame.
- CFC & HCFC free refrigeration system with low noise level.
- Specially designed air cooled condenser and aero dynamic fan.
- LBP Hermetic Compressor with delay start function to avoid any compressor damage.
- Double Auto Cascade refrigeration.
- Equipped with drain Valve system.
- Vacuum pump protection from moisture.
- Transparent Acrylic drying chamber door.
- In built Pre Freezing system eliminates the need of separate freezer and product transfer.
- System is equipped with gas inert valve.
- System has end point determination facility
- Shelf pull down time (20°C to -40°C) is ≤ 40 minutes.
- Condenser Pull down time (20°C to -45°C) is ≤ 30 minutes.

Control & Alarm System

- Microprocessor Touch Screen PLC Control LCD System displays digital temperature, vacuum and various other parameters with graphs presentation on the control panel and freeze drying curve control with 32 programs and data recording which can be transfer to users PC.
- Manual & Automatic Control operations.
- Sensor Platinum PT-100Ω(Class A 0.15 grade).
- Vacuum control System.
- Average evacuation time of 20-40 minutes to reach acceptable vacuum level.
- Auto vacuum release valve to prevent back flow of contaminated oil or gas.
- Temperature Setting for auto start of vacuum pump once the cold trap reaches -40°C temperature.
- Alarm system for power failure or any other irregularities relating to the operations.
- Chemical resistant two Stage Rotary Vane Vacuum Pump(1000-1800LPM) with Ultimate pressure (2x10⁻³mbar) or better.
- Time to reach 100m Torr is ≤ 45 minutes.
- Vacuum control range 50 to 500 m Torr.
- Leak rate ≤ 0.0042mbar L/sec
- Vacuum rate ≤ 30mTorr/hr



PILOT SERIES PHARMA SCALE

Model	ST-8570(P)	ST-8550(P)
Cold Trap Temperature	-85°C	
Material	SS316L (Drying Chamber, Cold Trap, Shelf and Tray)	
Total Capacity	70kg	50kg
Ice Removal Capacity/24hrs.	30Ltr	21Ltr
Tray Size (mm/qty)	500x300/21 nos. (customization available)	500x300/15 nos. (customization available)
Shelf Space	65mm	80mm
Shelf Area	3.15m ²	2.25m ²
Shelf size mm/no.	500x900/7	500x900/5
Refrigerant	R407C,R508B	
Product Sensor	7	5
Installation Power	AC380V3PH (50Hz) 18KW	AC380V3PH (50Hz) 13.5KW
Dimension(mm)	W1220xD2210xH1870	W2025xD1195xH1720
Shelf Temperature	-50°C ~+70°C (accuracy ± 1°C)	
Condenser surface area	2.15m ²	
Heat Generated	6kw	
Deposition Rate	≥0.80L/hr	
Compressor / nos.	2 (Tecumseh 5.5 hp)	2 (Tecumseh 3.5 hp)
Controller	PLC LCD Touch Screen + 32 programs, USB Download with software	
Shelf Cooling System	Silicon Oil Type	
Final Vacuum	≤ 15mtorr	
Defrost	Auto (Hot Gas)	
Stoppering	Hydraulic (Optional)	
Certification	ISO, CE, GMP, 21CFR Part 11 Compliance	
Weight (Kg)	1800(Kg)	1300(Kg)

(Dimensions and specifications are subject to change without notice for further improvement on design)

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Solution For Vacuum Freeze-drying System Accessories



8-12 Port SS Drying Chamber



Acrylic Drying Chamber with Tray
(200mm Diameter)



8-12 Port Acrylic Drying Chamber with
Manifold and complete SS valve flask attachment



8-12 Port Drying Chamber Manifold &
Stoppering System with SS valve flask attachment



4-48 Port SS Manifold



24 /52/104 Port Ampoule Adapter



Tube holder



4branch glass adaptor



Chemical trap



Oil mist trap (small)/large



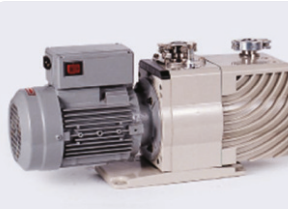
Adaptor & Cap, Round and Wide Mouth Flask
(50ml ~ 3000ml)



Vacuum valve / Vacuum grease



Vacuum Pump Oil



Chemical Resistant two stage rotary
vane vacuum pump (100-500LPM) with
ultimate pressure (2X10⁻³) or better



Temperature Monitor



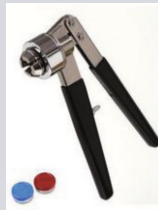
Vacuum Tester Device



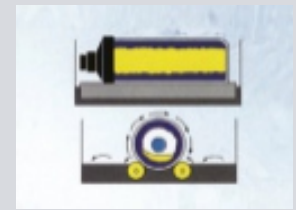
Pump table



Ampoule Bottle Sealing Torch



Capping Device



Prefreezing Bath with flask rolling kit

Mfr. by:

SELECT REFRIGERATION

E-283, Patel Garden, Dwarka Mor, New Delhi - 110059 INDIA

Ph : 91-11-65642376, 9717569994, 9717569992 Fax : 91-11-43852133

E-mail : info@selectrefrigeration.in

Website : www.seltis.in