



DualGuard ULT Freezer

# DualGuard ULT Freezer

## Smarter by Design

Vacc-Safe Smart-Inverter ULT Freezers are designed to be energy saving. The control system automatically tunes the speed of the compressors to optimize the operation.



### Smart-Inverter Technology

Variable speed compressors are coupled in the freezer, the compressors will work based on the loads and inter change fluctuation. The control system automatically tunes the speed of the compressors to optimize the operation.



### Low Energy Consumption

Smart-Inverter freezer coupled with environmentally safe and friendly hydrocarbon refrigeration system, allows the freezers to operate at a low level of energy consumption.



### High Temperature Stability

The innovative control algorithm balances the effects of temperature loss with the unique frequency conversion refrigeration system, ensuring the cabinet temperature stability.



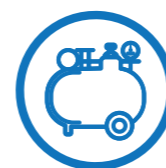
### Active ECO Technology

Vacc-Safe active ECO technology can significantly reduce energy consumption and maintain good interior temperature uniformity at the same time.

# DualGuard ULT Freezer

## Safer by Design

Vacc-Safe DualGuard ULT freezers are designed to offer the highest level of security for high-value samples. Using two independent refrigeration systems, if one system fails, the other can maintain the freezer's temperature uniformly in the -80°C range.



### World-famous Components

The compressor and fan are using world-famous brands, and imported from Germany and America directly. Lifespan increase up to 20%.



### Multifunction Alarms

Include high, low temperature, sensor error, power failure, high ambient, door ajar, door open alarm, low battery alarm.



### Superior Temperature Uniformity

Superior temperature uniformity greatly reduce risk of sample degradation caused by temperature fluctuation.



### Fast Cabinet Pull Down

Usually takes an average of three hours to reach -81°C at 25°C ambient. The faster pull down, the safer for the samples.



### Patented LBA Forming Technology

Vacc-Safe patented forming agent can provide the highest density cabinet, the Space utilization increase 10%.

# DualGuard ULT Freezer

## 1 Multi-layer Silicone Sealing Structure

Multi-layers silicone gaskets provide a tight seal between the inner doors and outer door, reducing heat exchange rate and retaining the inner temperature better when there is power failure.



## 2 Multi-level Alarms

Alarm functions include high, low temperature, sensor error, power failure, high ambient alarm, door open alarm.

## 3 Ingenious Handle Design

Ingenious handle design helps you easy to open and close door easier. Lockable handle safeguards your precious samples. Padlock can also be added for extra sample safety.



## 4 Stainless Steel Cabinet

Abrasive and corrosion resistance, easy clean.

## 5 VIP PLUS

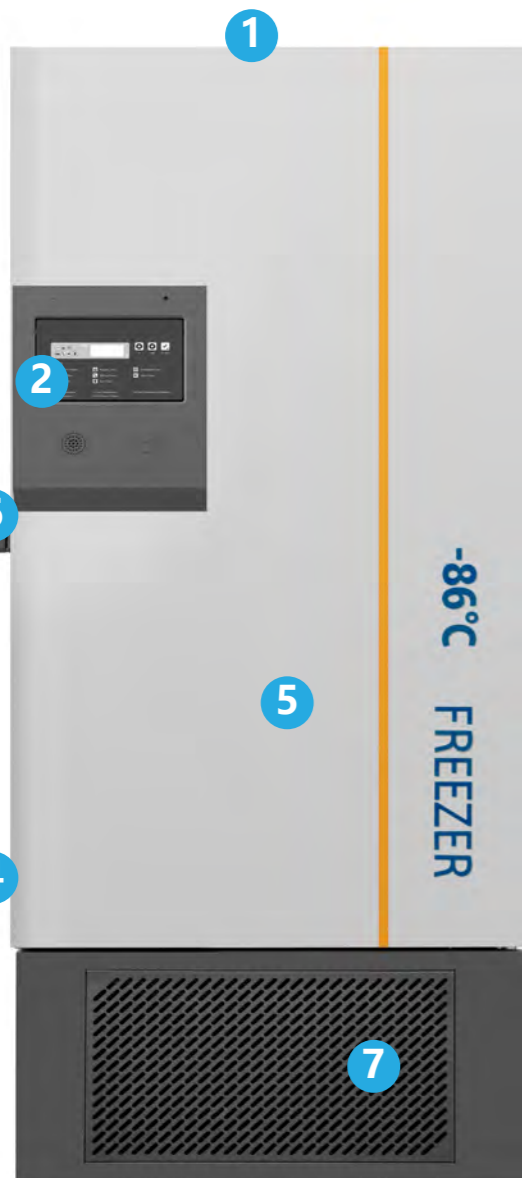
VIP PLUS vacuum insulation provides up to 30% more storage capacity than a conventionally insulated freezer.

## 6 Heated Pressure Equalization Port

It allows users to re-open the main door quickly when entering, rust-proof, freeze-free.

## 7 Filter Design

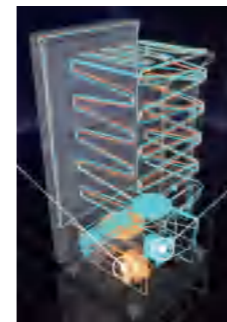
Tool-free removable filter design, easy and quick to clean the filter.



VS-86L568

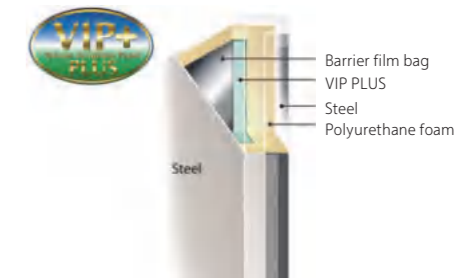
# Vacc-Safe Advanced Technologies

Vacc-Safe DualGuard Cooling System offers the high level security storage. Two independent systems, in the case of an unexpected failure of one cooling circuit, the other can maintain the freezer's temperature uniformly in the  $-80^{\circ}\text{C}$  range.



## DualGuard Cooling system

VIP Plus vacuum insulation provides up to 30% more storage capacity than a conventionally insulated freezer, without increasing the footprint. A glass fibre core provides advanced thermal properties.



## VIP PLUS Design

## D-Shape Evaporator

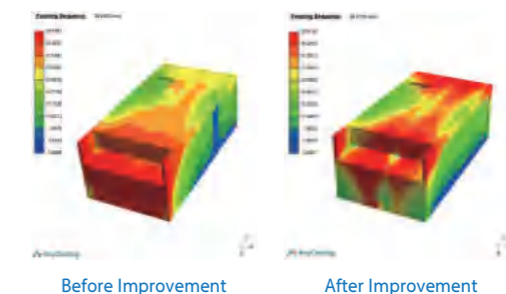


Patented D-shape evaporating tube allow the bigger heating exchange area. The heating exchange rate increase up to 15%. More space contact, faster pull down.



The DualGuard ULT Freezers are managed by an integrated microprocessor controller with LED screen to provide optimal user experience. The built in USB port allows logged data to be easily transferred to a PC.

## Android Touchscreen Control



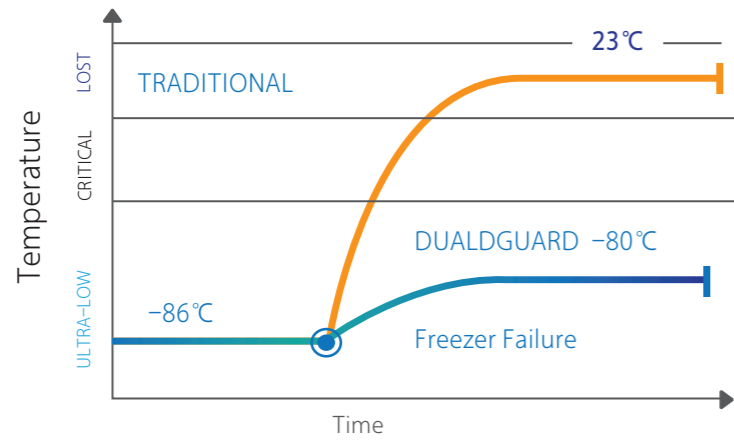
1. Better insulation, more energy-saving.  
2. More reasonable of the foaming layer design, higher space utilization rate.

## LBA Forming Technology

# Discover Vacc-Safe DualGuard ULT Freezer

# Discover Vacc-Safe Active ECO Technology

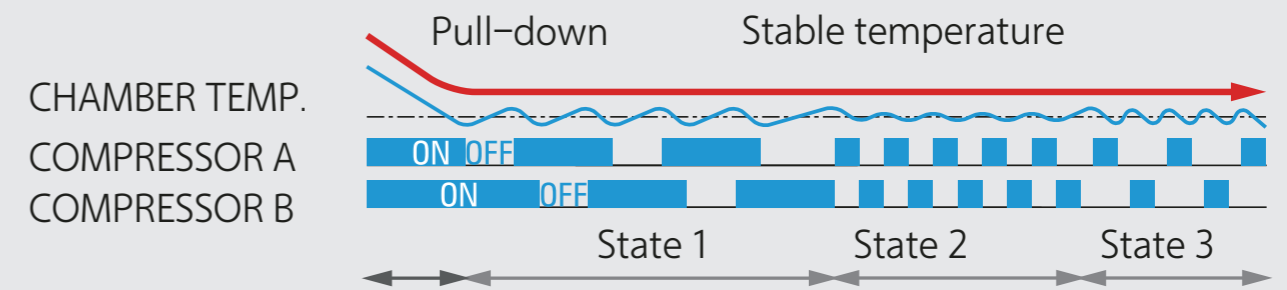
## Discover the DualGuard -86°C Refrigeration System



Comparison between Vacc-Safe DualGuard system and traditional ULT freezer. Single compressor can't maintain the temperature -80°C stably.

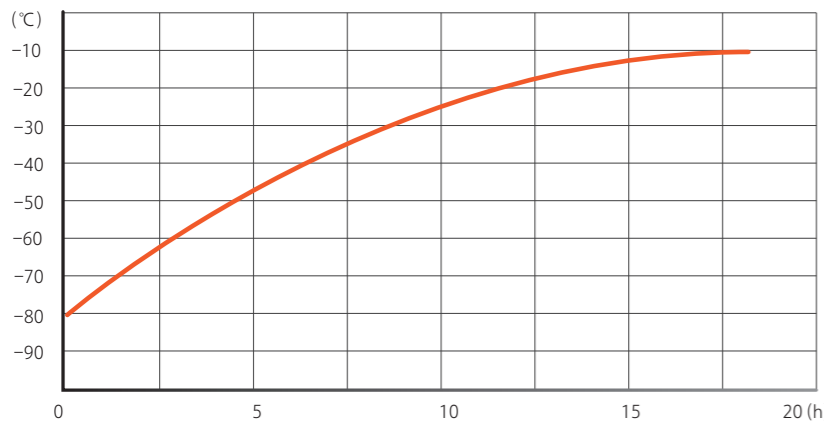
Vacc-Safe Active ECO Technology is applied to all Vacc-Safe ULT freezer, which means all the products default to run in ECO mode. Based on ECO technology, the compressors performance based on the loads or temperature change.

The control system automatically tunes the speed of the compressors to optimize the operation. So, Vacc-Safe Active ECO Technology can significantly reduce energy consumption while maintaining good interior temperature uniformity.

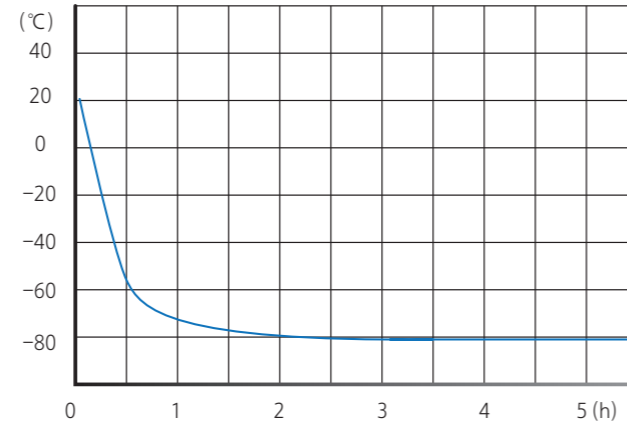


COMP A/B COMPLEMENTARY OPERATION

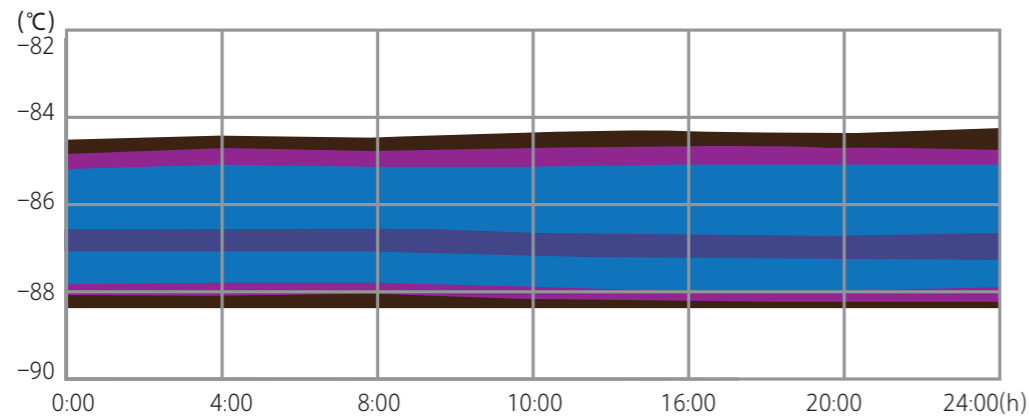
## Temperature recover curve








## Temperature cool down curve



## Temperature uniformity



VS-86L838

Item	Model No.	VS-86L568	VS-86L568T	VS-86L718	VS-86L838	VS-86L838T
Product Image	Product Image					
Technical Data	Cabinet Type	Upright	Upright	Upright	Upright	Upright
	Climate Class	N	N	N	N	N
	Cooling Type	Direct cooling	Direct cooling	Direct cooling	Direct cooling	Direct cooling
	Defrost	Manual	Manual	Manual	Manual	Manual
	Cooling System	Twin Cooling	Twin Cooling	Twin Cooling	Twin Cooling	Twin Cooling
	Refrigerant	Mixed refrigerant	Mixed refrigerant	Mixed refrigerant	Mixed refrigerant	Mixed refrigerant
	Total Storage Volume(L)	568	568	718	858	858
	2ml Cryo Tube Qty	40000	40000	50000	60000	60000
	External Material	High quality coated steel	High quality coated steel	High quality coated steel	High quality coated steel	High quality coated steel
	Inner Material	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Control	Controller	Microprocessor	Microprocessor	Microprocessor	Microprocessor	Microprocessor
	Display	LED	Touch Screen	LED	LED	Touch Screen
	Temperature Accuracy(°C)	0.1	0.1	0.1	0.1	0.1
	Temperature Range	-40 ~ -86°C	-40 ~ -86°C	-40 ~ -86°C	-40 ~ -86°C	-40 ~ -86°C
Dimensions	Product Dimensions(mm)(wxdxh)	885*995*1990	885*995*1990	1030*995*1990	1175*995*1990	1175*995*1990
	Interior Dimensions(mm)(wxdxh)	595*720*1310	595*720*1310	740*720*1310	885*720*1310	885*720*1310
Electrical Data	Power Supply	110~240V /50 ,60HZ	110~240V /50 ,60HZ	110~240V /50 ,60HZ	110~240V /50 ,60HZ	110~240V /50 ,60HZ
Functions	High Temperature Alarm	Y	Y	Y	Y	Y
	Low Temperature Alarm	Y	Y	Y	Y	Y
	Door Ajar	Y	Y	Y	Y	Y
	Power Failure Alarm	Y	Y	Y	Y	Y
	High condenser temperature alarm	Y	Y	Y	Y	Y
	High ambient Temperature Alarm	Y	Y	Y	Y	Y
	Low Battery	Y	Y	Y	Y	Y
	Sensor Failure alarm	Y	Y	Y	Y	Y
	USB Interface	Y	Y	Y	Y	Y
	Door Heating	Y	Y	Y	Y	Y
	Porthole	Y	Y	Y	Y	Y
	Universal Wheel	Y	Y	Y	Y	Y
Caster	Y	Y	Y	Y	Y	



## Lab-Guard Series

## Lab-Guard Series



VS-86L458



### Safe and Reliable Samples Storage

Superior temperature uniformity;  
Imported world-famous components.



### Double Door Design

Four independent / detachable inner door allows better samples management. And each inner door has gasket which will reduce heat exchange rate and retaining the inner temperature better.



### Multi-level Alarms

Alarm functions include high, low temperature, sensor error, power failure, high ambient alarm, door open alarm.



### Optimized Refrigeration System

High efficiency cooling fans and compressors, combined with hydrocarbon refrigerants, ensure energy savings and long-term sample security.

## Scope of Application

The Lab-Guard ULT freezer can be used for the storage and protection of temperature sensitive samples, vaccines, longitudinal study samples, important medical research samples, valuable pharmaceutical products, clinical trial samples.

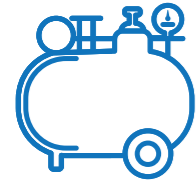
### ■ Safer by Design



Slim cabinet design for better access



World leading energy saving



World-famous Components



Fast Cabinet Pull Down



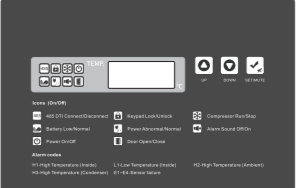
Superior temperature recover time



VIP PLUS design



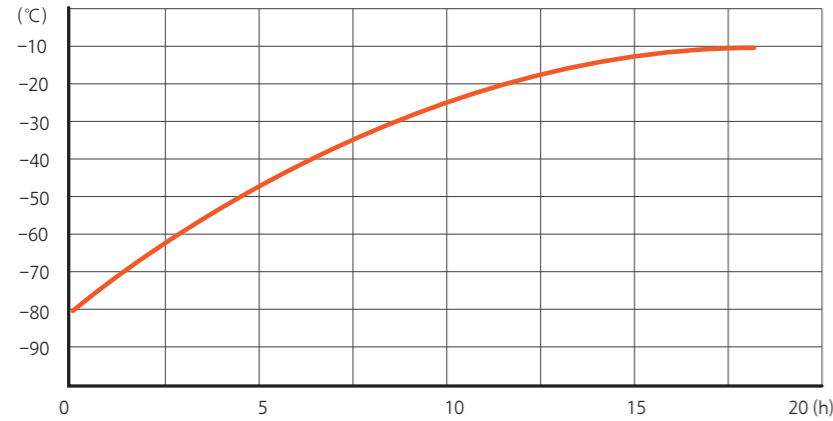
VS-86L458

- 1 Multi-layer Sealing Structure**  
 Multi-layers gaskets provide a tight seal between the inner doors and outer door, reducing heat exchange rate and retaining the inner temperature better when there is power failure.
- 2 VIP PLUS Design**  
 Provides up to 30% more storage capacity than a conventionally insulated freezer, without increasing the footprint. A glass fibre core provides advanced thermal properties.
- 3 USB Port**  
 Enables users to download historical temperature data for compliance/auditing purposes.
- 4 LED Display**  
 Alarm functions include high, low temperature, sensor error, power failure, high ambient alarm, door open alarm.
 
- 5 Lever Handle Design**  
 Ingenious handle design helps you easy to open and close door easier. Lockable handle safeguards your precious samples. Padlock can also be added for extra sample safety.
- 6 Heated Pressure Equalization Port**  
 It allows users to re-open the main door quickly when entering, rust-proof, freeze-free.
- 7 Narrow Door Design**  
 The freezer can pass through an 750mm wide door when the door is open.

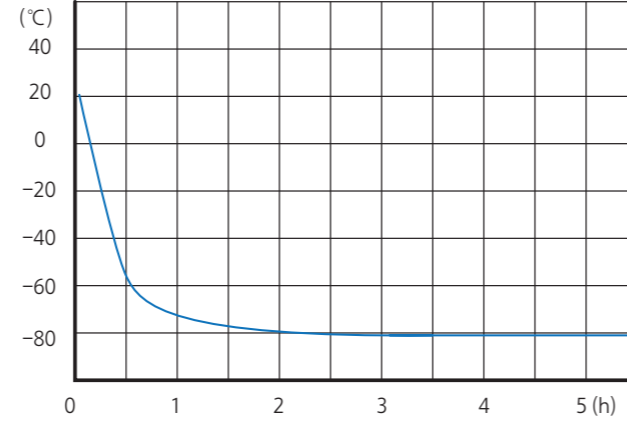
# Lab-Guard Series

## TYPICAL PERFORMANCE CHARACTERISTICS AT 25° C AMBIENT

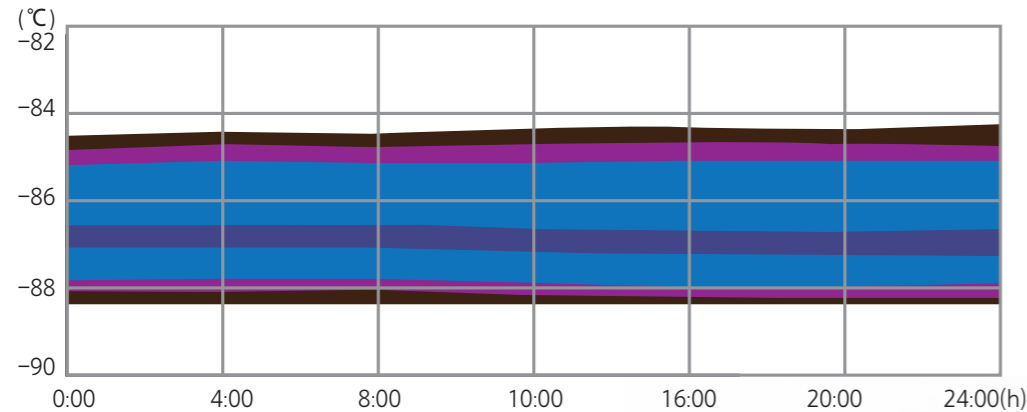
### Temperature recover curve





### Temperature cool down curve



### Temperature uniformity



Item	Model No.	VS-86L458	VS-86L458T
<b>Product Image</b>	Product Image		
<b>Technical Data</b>	Cabinet Type	Upright	Upright
	Climate Class	N	N
	Cooling Type	Direct cooling	Direct cooling
	Defrost	Manual	Manual
	Refrigerant	Mixed refrigerant	Mixed refrigerant
	Total Storage Volume(L)	458	458
	2ml Cryo Tube Qty	32000	32000
	External Material	High quality coated steel	High quality coated steel
<b>Control</b>	Inner Material	Stainless steel	Stainless steel
	Controller	Microprocessor	Microprocessor
	Display	LED	Touch Screen
	Temperature Accuracy(°C)	0.1	0.1
<b>Dimensions</b>	Temperature Range	-40 ~ -86°C	-40 ~ -86°C
	Product Dimensions(mm)(wxdxh)	885*855*1990	885*855*1990
<b>Electrical Data</b>	Interior Dimensions(mm)(wxdxh)	595*580*1310	595*580*1310
	Power Supply	110~240V /50 ,60HZ	110~240V /50 ,60HZ
<b>Functions</b>	High Temperature Alarm	Y	Y
	Low Temperature Alarm	Y	Y
	Door Ajar	Y	Y
	Power Failure Alarm	Y	Y
	High condenser temperature alarm	Y	Y
	High ambient Temperature Alarm	Y	Y
	Low Battery	Y	Y
	Sensor Failure alarm	Y	Y
	USB Interface	Y	Y
	Door Heating	Y	Y
	Porthole	Y	Y
	Universal Wheel	Y	Y
	Caster	Y	Y



# -86°C ULT Freezer Series

## Scope of Application

ULT freezers can be used for the storage and protection of temperature sensitive samples, vaccines, longitudinal study samples, important medical research samples, valuable pharmaceutical products, clinical trial samples.



VS-86L108



### Safety

- Imported world-famous compressor and fan
- Perfect alarm systems: buzzer alarming with light flashing;
- High and low temperature alarm, power failure, sensor failure alarm;
- The alarm temperature can be set as required;
- Frequent start protection,
- Safety lock;
- Backup system(CO2/LN2) as optional.



### Key Features and Reliability

- Microcomputer temperature control, temperature accuracy 0.1 °C ;
- Ultra-thick foam layer, double-sealed door;
- Touch Screen;
- LED / LCD Display;
- Wide voltage range design, it can work under 187V~242V.



### Ergonomic Design

- Stainless steel inner tank, corrosion-resistant, easy to clean
- Fixed caster + universal wheel;
- CFC free, environment friendly
- Optimized evaporator and condenser layout.

Item	Model No.	VS-86L108
Product Image	Product Image	
Technical Data	Cabinet Type	Upright
	Climate Class	N
	Cooling Type	Direct cooling
	Defrost	Manual
	Cooling System	Auto-cascade
	Refrigerant	Mixed refrigerant
	Total Storage Volume(L)	108
	2ml Cryo Tube Qty	9000
	External Material	High quality coated steel
	Inner Material	Galvansied Steel Sheet
Control	Controller	Microprocessor
	Display	LED
	Temperature Accuracy(°C)	0.1
	Temperature Range	-40 ~ -86°C
Dimensions	Product Dimensions(mm)(wxdxh)	955*675*815
	Interior Dimensions(mm)(wxdxh)	440*435*590
	Load capacity (40HQ)	
Electrical Data	Power Supply	110~240V /50 ,60HZ
	Rated Power(W)	480
	Energy Consumption(kwh/24h)	
	Rated Current(A)	
Functions	High Temperature Alarm	Y
	Low Temperature Alarm	Y
	Door Ajar	Y
	Power Failure Alarm	Y
	High condenser temperature alarm	Y
	High ambient Temperature Alarm	Y
	Low Battery	Y
	Sensor Failure alarm	Y
	USB Interface	Y
	Door Heating	Y
	Porthole	Y
	Universal Wheel	Y
	Caster	Y

# Consumables

## Scope of Application

Vacc-Safe Biomedical provides a wide selection of freezer boxes to meet the storage needs of various conventional cryopreservation tubes for biobank.

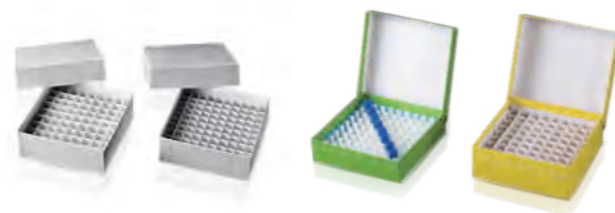
### PP Freezer Box

- Made of highly transparent polypropylene (PP) material, which can be repeatedly frozen and thawed, and stored for a long time;
- The product can withstand temperature range:  $-90^{\circ}\text{C}$ – $121^{\circ}\text{C}$ ;
- Resistant to alcohols and isothermal organic solvents;
- International standard size, suitable for standard sized cryopreservation tubes and freezer racks;
- Suitable for storing 0.5ml, 1.0ml and 2.0ml cryotubes and microtubes;
- A variety of colors available, easy to distinguish and find samples.



### PA Freezer Box

- Made of durable cardboard, can be frozen and thawed repeatedly, and is not easy to frost;
- According to different outer layers of paper, it can be divided into: ordinary white, film-coated and colored paper freezer boxes;
- Resistant to alcohol and other mild organic solvents;
- Product can withstand temperature range:  $-196^{\circ}\text{C}$ – $121^{\circ}\text{C}$ ;
- Can be used for liquid nitrogen storage after drilling;
- Removable lid (with writing area), the surface is easy to stick labels to distinguish;
- Suitable for all standard freezer racks.



### PC Freezer Box

- Made of high-strength polycarbonate (PC) material, which can be repeatedly frozen and thawed, and stored for a long time;
- The box can be used to store samples in ultra-low temperature freezer and liquid nitrogen tanks;
- The product can withstand temperature range:  $-196^{\circ}\text{C}$ – $121^{\circ}\text{C}$ ;
- Resistant to alcohols and other mild organic solvents;
- The gap and line design of the box body is conducive to the rapid cooling of samples and the rapid discharge of liquid;
- International standard size, suitable for standard sized cryopreservation tubes and freezer racks;
- Suitable for storing 0.5ml, 1.0ml and 2.0ml cryotubes and microtubes;
- Highly transparent box cover design, and clear digital mark on the box body, easy to observe and find samples;
- A variety of colors available, easy to distinguish samples;
- The unique design of box corner ensures the accuracy of sample positioning.



### Cryopreservation Tube

- Made of high-strength, high-toughness medical grade polypropylene, which can be repeatedly frozen and thawed;
- Maximum liquid storage capacity is 80% of the maximum scale;
- Withstood temperature range:  $-196^{\circ}\text{C}$  to  $121^{\circ}\text{C}$ , sustainable for high temperature and high pressure;
- There is a sealing ring design in the cover to avoid sample leakage and ensure the safety of the sample in the tube;
- A variety of color caps are available, easy to identify and distinguish samples.



# Freezer rack

## Scope of Application

Midea's bio-medical freezer rack perfectly matches Midea's ultra-low temperature freezers of various models, and is compatible with all brands of ultra-low temperature in the industry, matching various standard-size cryogenic storage boxes in the market, maximizing the utilization of storage space and meeting the storage needs of various types of biobank.

### Product features

- Midea's biomedical freezer rack is made of high-quality 304 stainless steel, which is resistant to low temperature, abrasion and corrosion; environmental protection and safety.
- Vacc-Safe Biomedical can provide three types of freezer racks: flat drawer type, side drawer type and single freezer rack.

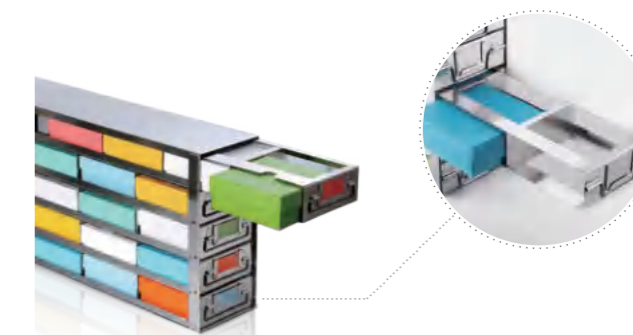
### Sliding-drawer Freezer Rack

Made of super thick corrosion resistant stainless steel;  
Sliding design for easy access;  
Humanized handle design: with a low temperature resistant plastic ring to prevent the handle and the outer of rack from freezing, protecting the operator effectively;  
With label slots for easy identification of samples;  
The drawer with flanging edges design to avoid the risk of injury, with colored sample identification labels.



### Side-access Freezer Rack

Made of super thick corrosion resistant stainless steel;  
The special edges design to avoid the risk of injury;  
Perfectly match up with standard sized freezer boxes;  
Suitable for 2-inch and 1-inch freezer boxes, suitable for common low-temperature freezers in the market;  
The side access design is more conducive to the side information marking of the freezer box and quick access to the freezer box;  
Provide personalized customization.



### Single Freezer Rack

Made of super thick corrosion resistant stainless steel;  
Suitable for 2-inch and 1-inch freezer boxes, and suitable for international standard freezer;  
The single freezer rack is simple in structure and easy to use, especially suitable for sample storage in liquid nitrogen tank.

