

Liosmart 100

Condenser capacity 100 kg of ice / 24h

Shelve surface from 1,44 m² to 7,2 m²

Refined solution for rapid and repeatable freeze drying of:

- Dairy products
(milk, starter cultures, yogurts, probiotics, ice-cream,...)
- Vegetables & fruits
(Strawberry, Figs, Beans,...)
- Fish & meat
 - Floral
 - Research



Cylindrical AISI 304
Stainless steel chamber,
polished to Ra(0,5µm with
quick door closing
mechanism and highly
resistant food grade
silicone seal

Shelves 600 x 1200 mm =
0,72 m² / shelfe
Min 2 shelves = 1,44 m²
Max 10 shelves = 7,2m²
Minimum spacing 50 mm
Shelve temperature
range:
-40°C...+70°C.
Heat transfer via closed

3x temperature
sensor for product
monitoring

PLC based controller.
Simple and effective
programming of all
Freeze-drying steps, with
visualization, history
process reports. SW pack
for PC

Shelve system
fully and simply
removable for
washing

Pirani vacuum
gauge for pressure
monitoring

Fully enclosed
design with powder
coated exterior
RAL 7035

Vacuum control
for ultimate
performance

condenser capacity
100 kg of ice/24h
fully in SS 304

Fast defrost , no
external hot water
supply

Vacuum pump
rotary vane or
optional dry
pump

Large observation
window for visual
product & process
control

Quick door
closing
mechanism

Front designed for
stand alone or
clean room wall
installation

High-capacity
refrigeration system.
Based on
semihermetic
compressor and air
cooled condenser,
optional water cooling

Design:

In all points of product and process design our main goal is to deliver ultimate tool for reliable, repeatable, rapid and risk free Freeze-drying. Achieving above mentioned with state of the art design & manufacture technology, brand name components, smart and innovative answers to process & product requirements.

Chamber:

Cylindrical shape of the main chamber delivers number of benefits. Such as economical, weight reduction, enough space to install high capacity shelves and condenser coils all in a very compact and proven design. Chamber door hinged in a way to ensure full accessibility for loading and unloading with smart quick locking handles. Also equipped with observation window for visual product monitoring thru the entire process. Main chamber seal made of high resistance profile food grade silicone seal.

Shelves:

Highest attention on superb shelf surface flatness and temperature uniformity, this 2 parameters ensuring rapid and homogenous freeze-drying thru the entire shelf surface. Temperature uniformity across each and all shelves is delivered with closed loop thermal fluid easily covering temperatures from -40°C...+70°C. Shelf system is modular allowing assembly of minimum 2 but even up to 10 shelves. At max capacity still giving 50 mm of distance between shelves for ergonomic loading and unloading. Shelf system is also designed for quick and simple removal from the chamber. This way cleaning between product replacements becomes stress less and fast operation.

Condenser:

High capacity condenser with maximum load of 100 kg of ice in 24 hours is more than sufficient. Refrigeration system is designed to maintain the condenser temperature down to -50°C. However it is also important to deliver quick melt down/defrost. Here our system delivers hybrid defrost via reversible cooling/heating loop while using hot reverse condensate flow. Giving most energy efficient and quick results without any need for external hot water supply.

Control:

PLC based control system offering user friendly and understandable programming of all parameters for each freeze-drying step. Open storage for 10 different product cycles. Large display also showing full system visualization with all measured values, history trends of all measured values, self diagnostic and PC communicating ability.



Technical data:

LIOSMART 100	
Exterior dimensions (WxDxH) in mm	1400 x 1800 x 1900
Chamber dimensions in mm	Ø1000 x 1300
Shelf dimension in mm	600 x 1200
Number of shelves	Min 2 Max 10
Total shelf area in m²	1,44 @ 2 shelves 7,2 @ 10 shelves
Shelf spacing in mm	50 @ 10 shelves
Shelf temperature range °C	-40°C....+70
Shelf cooling dawn rate	+20 to -20 less than 60 min
Condenser capacity	100 kg ice / 24 h
Condenser temperature	-50°C
Chamber,shelves,condenser material	AISI 304 Ra < 05µm
Vacuum	Capacity 80 m3 / h Rotary vane or dry pump
Power supply	3 x 400 V 50 Hz, 15 kW

Options:

- Selectable number of shelves
- Variety of tray options
- Variety of vacuum pump options
- Stand alone or clean room wall installation

