

### FD-3L

#### Tray Freeze Dryer



- **60L Ice Capacity**
- **3.24m<sup>2</sup> Shelf Area**
- **All-include Structure**
- **Versatile&Economic**

FD-3L shelf freeze dryer designed to fit commercial and industrial freeze drying process, material loading by bulk in trays, the machine designed meet GMP requirements.

The freeze dryers designed consider a lot of factors that will guarantee your success freeze drying result and high dried quality, we provide standard factory models as well as customized configurations to meet your special requirements.

#### Standard Specification:

Shelf Area	<b>3.24m<sup>2</sup></b>
Shelf Type	Fixed, Bulk loading
Shelves Temp.	-50C to +70C
Shelf Size	900*600mm
Shelves	6+1
Ice Capacity	60kgs
Condenser Temp.	-45C or -80C
Condenser Location	Rear side of drying chamber
Defrost	Water soaking
Vacuum Degree	<3Pa
Vacuum Pump Rate	42m <sup>3</sup>
Compressor	Reciprocating
Power Install	15.5kwh
Size	2800*1200*2500mm
Voltage	380V/50-60Hz/3P
Controller	PLC + Touch Screen
Main Material	AISI304 or 316L

#### Technical Features:

##### CONTROL SYSTEM:

- PLC + Touch screen system, PC connectivity.
- Automatic and Manual operation selectable.
- System working status diagram display.
- Freeze Drying status & data display.
- Drying data auto storage, could download to U disk.

##### DRYING HOUSE & DOOR:

- Design according to GB pressure container directives.
- Rectangular or cylindrical chamber with extra thick insulation.
- Mirror finished walls, shelves, doors and accessories.
- Hinged door, in front door and side drying house have viewing ports.
- Plates and drying house inner wall mirror finish.

##### SHELVES:

- Stainless steel made, Mirror finish.
- Sandwich type plates fill silicone oil, all plates have both freezing and heating function: -50C ~ +70C.
- 3.24m<sup>2</sup> useable shelf area, 6 plates (size 900\*600mm) with material loading capacity, 1 for extra radiant temperature.

##### CONDENSER:

- Condenser house in rear side of drying chamber, Stainless steel material for both coils and walls, surface mirror finish.
- Condenser floor slope design for water thoroughly discharge.
- Exclusive designed coils route, high performance vapor collection.

##### VACUUM SYSTEM:

- Two stage oil sealed vacuum pump, with vacuum adjust controller.
- Pneumatic isolation valve installed between condenser and pump.

#### System Performance:

Shelves Lowest Temp.	-50C
Shelves Temp. Range	-50C to +70C
Shelves Cooling Rate	+20C to -40C <60min
Shelves Heating Rate	>1C/min
Shelves Temp. Uniformity	Freezing: ±2C Heating: ±1C
Shelves & Wall Roughness	Ra<0.5
Shelves Flatness	<0.5mm/m
Condenser Lowest Temp.	-45C or -80C
Condenser Cooling Rate	+20C to -40C <30min
Condenser Coil Roughness	Ra<0.5
Vacuum Rate	Atm to 0.1mbar <30min
Vacuum Final	<3Pa
Vacuum Leakage	< 5x10 <sup>-2</sup> mbarL/s

##### COMPRESSOR SYSTEM:

- Reciprocating compressor, oversized for stable performance.
- 1 stage compressor for -45C condenser, or 2 stage for -80C condenser.
- Water cooled condenser and cooling tower include.
- Brazed plate heat exchanger for shelves cooling, refrigerant direct expand for condenser cooling.

##### HEATING SYSTEM:

- Heated silicone oil drive by a centrifuge pump recycle inside shelves.
- Individual electric heater provides heating energy.

*Vikumer® Freeze Dry designed and manufactured freeze drying machine in China. Quality assured freeze dryer with CE marked.*