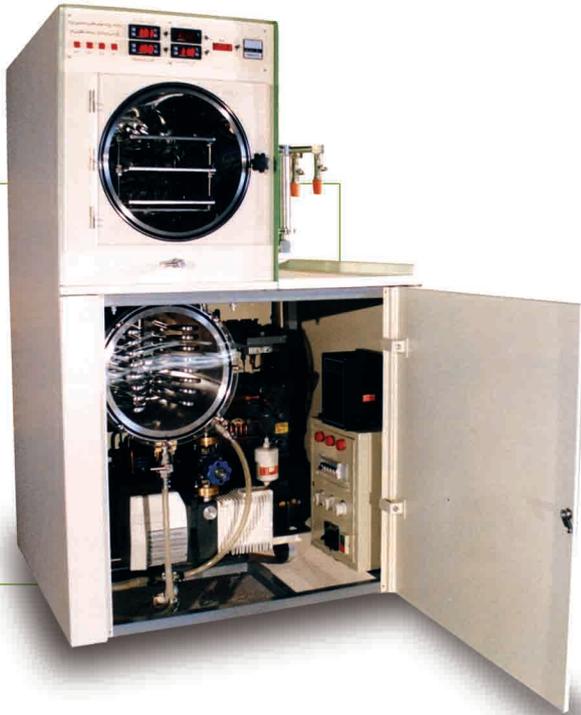


# FREEZE DRYER

For Laboratory, Development and Production



Pishtaz Engineering Company's FD-series of freeze dryers combines many different features of larger systems into a small console and using the best components and design techniques combined with an advanced control system. These series are designed to work with a wide variety of drying accessories. The robust design includes a high quality, smooth wall stainless steel ice condenser and bright, easy-to-read digital displays for both condenser temperature and vacuum pressure.

Freeze drying method is based on removing of water from biological and inorganic materials which are sensitive to heat. This method is used for providing sensitive and valuable materials.

Freeze drying is a key process in the pharmaceutical and biotech industries.

Freeze-dried products retain their original color, structure and clinical effectiveness.

Freeze-drying technique is an important method to produce nano-sized powders.

The FD-Series are the perfect solution for your laboratory, development and medium scale production needs.

## FEATURES

- High Performance
- Convenience and Comfort
- Economical
- Efficient insulation
- Space-saving console design
- Vacuum & temperature gauges
- CFC free refrigeration system
- Digital display of vacuum & temperature
- All stainless steel ice condenser
- Shelf pull down from +20 to -50°C in less than 20 mins

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## Applications

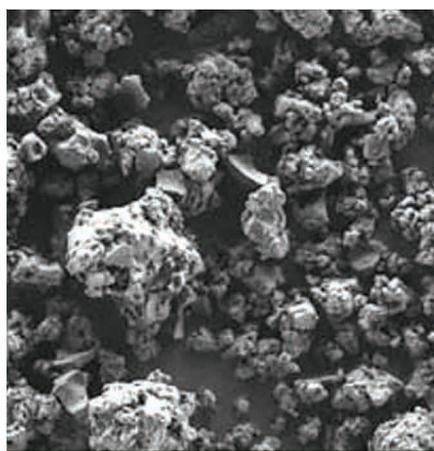
- Pharmaceuticals
- Nano-Technology
- FoodMedical
- Chemical
- Biotechnology
- Blood banks
- Agriculture
- Metallurgy
- Archeology

## SPECIFICATIONS

Model	FD-10	FD- 4
Total product shelf area , approx.	3000 cm <sup>2</sup>	942 cm <sup>2</sup>
Shelf number	3	3
Product shelf with heater	controllable up-to 70 °C	---
Distance between product shelf	7 cm and adjustable	8 cm
Condenser final temperature	- 60 °C	- 50 °C
Condenser capacity	10 kg	4 kg
Drying and cooling chamber material	stainless steel 316L	stainless steel 316L with acrylic glass lid and side glass for viewing inside
Vacuum pump type	12 M <sup>3</sup> /hrs two stage rotary vane vacuum pump	8M <sup>3</sup> /hrs two stage rotary vane vacuum pump
Vacuum manifold	for 4 flasks	for 4 flasks
Vacuum controller	controllable up-to 0.001 mbar	controllable up-to 0.001 mbar
Vacuum gauge	Pirani type	Pirani type
Refrigerator cooling system	water cooled	air cooled
Condenser defrosting system	by water as well as easy cleaning	--
Main supply	220V , 50Hz	220V , 50Hz
Floor space ( W x D )	900 x 800 mm	780 x 620 mm
Height	1500 mm	815 mm
Weight , approx	380 kg	68 kg



API in a Tray Freeze Dryer



API in the Active Freeze Dryer