

WAVE FD490

High-capacity commercial freeze dryer



The WAVE FD490 uses the proven FD440 MAX platform as its current engineering basis. The FD490 capacity configuration comprises 30 trays, 7.20 m² total tray area, 170 kg extraction capacity per cycle and 12 kW average power consumption.

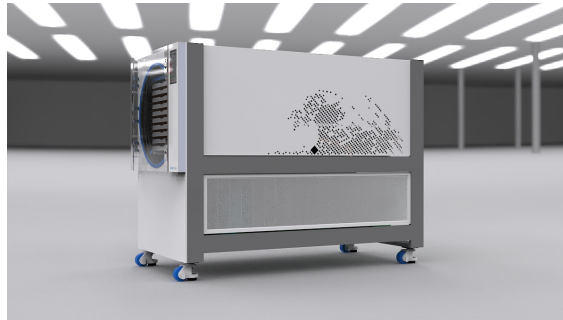
FD490 capacity configuration

- 30 trays
- 7.20 m² total tray area
- 12 kW average consumption
- 600 x 400 mm per tray
- 170 kg extraction per cycle
- FD440 MAX technical platform

PRELIMINARY VALUES BASED ON THE FD440 MAX PLATFORM

Technical specifications

All values not explicitly changed for the FD490 are inherited from the FD440 MAX planning basis. Final production values remain subject to engineering sign-off.



CAPACITY AND LOADING

Specification basis	FD440 MAX platform with FD490 capacity overrides
Max ice extraction	170 kg per cycle
Tray loading capacity	30 trays
Tray size	600 x 400 x 20 mm
Total tray area	7.20 m ²
Average power consumption	12 kW

CHAMBER

Chamber type	Extruded aluminium tube, 7 mm wall
Chamber diameter	720 mm
Chamber form	Tube
Chamber finish	Hard anodized 25μ inside and outside

SHELVES AND TEMPERATURE

Shelf material	Anodized aluminium or stainless steel
Shelf temperature range	-55°C to +80°C
Temperature sensors	PT100 Class A, ± 1°C precision

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VACUUM

Vacuum pump	Two-stage rotary vane or scroll pump (60 m³+)
Pump down time	< 30 minutes to 0.1 mbar
Final vacuum	< 0.07 mbar (10 mTorr max)
Leak rate	10 ⁻⁴ mTorr/sec
Vacuum sensor	Pirani

HEATING AND CYCLE

Heating power	Up to 500 Watt per tray
Heating system	Electrical heating mat
Max heating mat temperature	+80°C
Heating time (-30 to +20°C)	3 minutes, empty
Cooldown (+20 to -30°C)	20 minutes, unloaded
Defrost time	50 minutes, ice removable earlier

REFRIGERATION

Refrigeration compressors	1 x Bitzer 8.5 kW
Refrigeration power	10.5 kW at -40°C
Refrigerant	R449A
Min cooling temperature	-60°C

Technical specifications

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DOOR

Door material	50 mm acrylic
Door gasket	Silicone rubber
Door opening angle	170°, hinge on left
Door lock	Manual, mechanical closing

CONTROL

Control system	Siemens Simatic PLC or INTERKEY BRAIN
Monitor	Kinco HD colour touchscreen
Connectivity	CAT6 Ethernet / IoT WAVE Network

INSTALLATION

Dimensions (L x W x H)	2000 x 1100 x 1700 mm
Total weight	850 kg
Noise level	< 65 dB at 1 m
Max ambient temperature	< 23°C

ELECTRICAL

Electricity EU version	400V / 3 / N
Electricity US version	240V / 1 / N (120V / 2 / N)
Max electrical load	16.5 kW