Climacell EVO

Freeze Thaw Chambers with Humidity Control

Patented Forced Air Convection with Cooling

404 / 14.3ft³ **707** / 25ft³ **1212** / 43ft³

111 / 4ft³ **222** / 8ft³

Climacell EVO freeze thaw chambers provide precise temperature control between -20°C up to 100°C in combination with controlled humidity between 10% RH up to 98% RH, to produce optimal conditions for freeze thaw studies of industrial materials, including asphalt, concrete, adhesives, and coatings. The chambers are also ideal for testing food and beverage, pharmaceutical, and cosmetic products and packaging.

Key Benefits:

- Pharmaceutical-grade stainless steel chamber for easier cleaning and sterilization.
- Patented refrigeration system offer accurate and fast simulation of natural processes and reduces the risk of sample drying.
- Precise control of temperature, humidity and optional lighting.
- Temperature ramping and cycling.

Temperature:

-20°C up to 100°C

- *Optional* 160°C dry heat sterilization cycle.

Controlled Humidity:

10% RH up to 98% RH; uniformity up to 2%

- Controlled in 1% increments
- Active dehumidification

Refrigerant:

R 449a

Chamber:

- AISI 304 stainless steel *(AISI 316 option available)*.
- Seamless main chamber with rounded corners; fully removable inner chamber walls for easier cleaning and sterilization.

Optional Lighting (EVO):

- Programmable UV / Vis ICH Q1B lighting for photostability studies.
- Vis LED shelf and door lighting.
- Light intensity controlled in 1% increments.

Electrical:

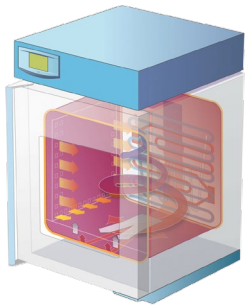
230V 50/60Hz

Optional Equipment:

- Stainless steel exterior: AISI 304 or 316.
- AISI 316 stainless steel chamber.
- Stacking frame for 111 devices.
- 160°C sterilization cycle.
- 1" (25mm) / 2" (50mm) / 4" (100mm) access port.
- Flexible PT 100 temperature sensor.
- Ethernet communication port
- Automatic key and door lock.
- Door sensor and alarm.
- Waterproof interior electrical socket: 230V.
- Rolling cart for 111 and 222 models.
- 4-20mA and BMS contacts (24V, 1A).
- IQ/OQ protocols with 9pt. or 27pt. temperature mapping.
- Warmcomm software:
  - 4.0B - data monitoring.
  - 4.0P - data monitoring and control.
  - 4.0F - FDA 21 CFR part 11 compliance.

EVO Controller:

- 5.7" LCD touch display.
- Fuzzy Logic algorithm constantly monitors chamber conditions and continuously optimizes parameters.
- (100) programs with (100) segments each for varying loads and parameters.
- Real-time programming and cycling with settings for temperature ramping.
- Fan adjustments in 1% increments.
- Programmable audible & visual alarms – temperature, time & humidity.
- Service programs for quick error diagnostics.
- USB device, RS232 & optional Ethernet port.
- Integrated SD card 30-day data logger & multi-level secure user authentication.
- Optional FDA CFR 21 part 11 compliance.



Patented Forced Air Convection System:

Our patented force air convection system provides simultaneaous vertical and horizontal airflow for precise temperature uniformity and rapid heating and cooling times. The process of heating from the bottom of the chamber to the top emulates natural airflow, allowing for a more accurate simulation of climate conditions.

Climacell EVO Freeze Thaw Technical Data		Model	111	222	404	707	1212
Interior Dimensions **Chamber:** AISI 304 stainless steel *(AISI 316 stainless steel option available)*	Volume	ft^3	4	8	14.3	25	43
		liters	111	222	404	707	1212
	Width	inches	21.3	21.3	21.3	37	3 x 21.3
		mm	540	540	540	940	3 x 540
	Depth	inches	15	20.9	20.9	20.9	20.9
		mm	380	530	530	530	530
	Height	inches	21	30.1	55.7	55.7	55.7
		mm	535	765	1415	1415	1415
Exterior Dimensions	Width	inches	30.7	30.7	43.1	59.2	99.6
		mm	780	780	1100	1500	2530
	Depth	inches	29.7	34.8	34.8	34.8	35.4
		mm	755	885	885	885	898
	Height	inches	47.8	57.1	74.4	74.4	75.6
		mm	1215	1450	1890	1890	1921
Shelves: Stainless Steel	Capacity: # of shelf guides in chamber side walls	maximum #	7	10	19	19	3 x 19
		standard #	2	2	2	2	6
Shelf Distance	Minimum distance between trays	inches	2.8	2.8	2.8	2.8	2.8
		mm	70	70	70	70	70
Useable Shelf Area	Width x Depth	inches	20.5x13.2	20.5x19.1	20.5x19.1	36.3x19.1	20.5x19.1x3
		mm	520x335	520x485	520x485	920x485	520x485x3
Maximum Shelf Load	One Shelf	lbs	44.1	66.1	66.1	110.2	66.1
		kg	20	30	30	50	30
	Total Per Unit	lbs	110.2	154.3	220.5	286.6	661
		kg	50	70	100	130	300
# Outer Metal Doors			1	1	1	2	3
# Inner Glass Doors			1	1	1	2	3
Volume of Steam Space		ft^3	5.9	10.8	18.7	31	61.9
		liters	167	305	530	878	1753
Operation Temperature		0°C up to °C	100	100	100	100	100
Temperature Accuracy	Distribution @ 10°C	± °C	<0.5	<0.5	<1	<1	<0.9
	Distribution @ 37°C	± °C	<0.5	<0.5	<1	<1	<0.5
	Uniformity	± °C	<0.2	<0.2	<0.3	<0.4	<0.2
Heating Time to 37°C from the Ambient Temperature		minutes	<11	<11	<13	<13	<30
Cooling Down Time From 22°C to 10°C		minutes	<21	<17	<19	<21	<21
Recovery Time After Door Opened for 30 s according to DIN 12880	@ 37°C	minutes	<4	<3	<3	<6	<10
	@ 50°C	minutes	<5	<6	<7	<6	<10
Relative Humidity (RH)	Range	%	10% - 98%	10% - 98%	10% - 98%	10% - 98%	10% - 98%
Accuracy RH ($T_{CHAMBER}$ ≥ 21°C)	In Time	%	<2	<2	<2	<2	<2
Heat Emission	@ 37°C	W	70	63	123	148	200
Noise Level of Complete Device		dB	46	50	56	58	60
Electrical Data: EVO -20°C	Max Consumption 50/60Hz	W	1630	1780	2115	2640	3215
		A	8.9	9.6	13.7	14.8	15.2
		V	230	230	230	230	230
IP Code			IP20	IP20	IP20	IP20	IP20
EVO Weight -20°C	Net	lbs	265	331	551	639	1257
		kg	120	150	250	290	570
	Gross	lbs	485	580	860	1102	1956
		kg	220	263	390	500	887