



Friocell *Evo*

Patented Forced Air Convection
Freeze Thaw Chambers



FRIOCELL® Freeze Thaw chambers are designed to create exact reproducible simulations of a wide range of environmental conditions through precise temperature control.

The fuzzy logic enabled microprocessor allows for complete control of chamber temperature for Freeze Thaw studies, while also being well suited for stability or shelf-life testing and material quality and durability testing. The FRIOCELL® also meets the requirements for ICH photostability studies when equipped with the EVO advanced controller and fully programmable door or shelf lighting.



Material quality and durability testing: adhesives, textiles, seals, composites, components, and electronics



Shelf life testing of food and beverage products and packaging



Pharmaceutical & Biotech stability and photostability testing of active ingredients & materials



EVO Controller

35.7" LCD touch digital display

Fuzzy Logic algorithm constantly monitors chamber conditions and continuously optimizes parameters.

(100) programs with (100) segments each for varying loads and parameters

Audible & visual alarms – temperature, time & humidity

FDA CFR 21 Part 11 compliant with addition of Warmcomm 4.0F software

USB device, RS232 & optional Ethernet port

SD card data storage in CSV and real time graph of the process

Integrated SD card 30-day data logger

Multi-level secure user authentication

Automatic defrost from 0°C and above

Temperature Range:

-20°C up to 100°C

Patented Air Flow Control:

Controlled in 1% increments

Chamber Volumes:

55 (2 ft³) • 111 (4 ft³) • 222 (8 ft³) • 404 (14.3 ft³) • 707 (25 ft³) • 1212 (43 ft³)

Chamber Construction:

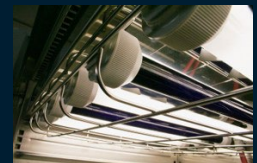
- AISI 304 stainless steel chamber (AISI 316 SS option available)
- Double wall, seamless main chamber & removeable inner chamber

Electrical Data:

115V 50/60Hz: 55, 111, 222, 404, 707; 230V 50/60Hz: 1212 and lighted devices

Optional Programmable ICH Q1B Lighting:

- VIS & UV fluorescent lighting
- VIS LED shelf and door lighting
- Light intensity controlled in 1% increments



Optional Equipment:

- Access ports 25 (1"), 50 (2"), 100 (4") mm
- Ethernet communication port
- Rolling carts for 55, 111 & 222 models
- Door sensor and alarm
- Automatic lock and key door lock
- Warmcomm data acquisition software:
 - ✓ 4.0B – Receive data
 - ✓ 4.0P – Receive data and control the device
 - ✓ 4.0F – FDA 21 CFR part 11 compliant
- BMS – Building monitoring alarm contact
- Flexible PT 100 sensor
- Stainless steel exterior
- 4-20mA & BMS contacts
- Socket 115V and 230V
- IQ / OQ protocols with 9pt or 27pt temperature mapping
- 160°C sterilization cycle
- AISI 316 stainless steel chamber

Friocell EVO Technical Data		Model	55	111	222	404	707	1212
Interior Dimensions Chamber: AISI 304 stainless steel (AISI 316 stainless steel option available)	Volume	ft ³	1.9	3.9	7.8	14.3	25	43
		liters	55	111	222	404	707	1212
	Width	inches	15.7	21.25	21.25	21.25	37	3 x 21.25
		mm	400	540	540	540	940	3 x 540
	Depth	inches	15	15	20.9	20.9	20.9	20.9
		mm	380	380	530	530	530	530
	Height	inches	14	21	30.1	55.7	55.7	55.7
		mm	355	535	765	1415	1415	1415
Exterior Dimensions	Width	inches	25.2	30.7	30.7	43.3	59	92.9
		mm	640	780	780	1100	1500	2360
	Depth	inches	29.7	29.7	34.8	34.8	34.8	35.4
		mm	755	755	885	885	885	898
	Height (Legs L, Casters C)	inches	34.4L/37C	41.1L/46.7C	50.2L/57.1C	75L/35C	75L/35C	75L/75.6C
		mm	875L/940C	1045L/1187C	1275L/1450C	1905L/1890C	1905L/1890C	1905L/1921C
Shelves: Stainless Steel	Capacity: # of shelf guides in chamber side walls	Maximum #	4	7	10	19	19	3 x 19
		Standard #	2	2	2	2	2	6
Shelf Distance	Min. distance between trays	Inches	2.8	2.8	2.8	2.8	2.8	2.8
		mm	70	70	70	70	70	70
Useable Shelf Area	Width x Depth	Inches	15x13.2	20.5x13.2	20.5x19.1	20.5x19.1	36.3x19.1	20.5x19.1x3
		mm	380x335	520x335	520x485	520x485	920x485	520x485x3
Maximum Shelf Load	One Shelf	lbs	44.1	44.1	66.1	66.1	110.2	66.1
		kg	20	20	30	30	50	30
	Total Per Unit	lbs	110.2	110.2	154.3	220.5	286.6	661
		kg	50	50	70	100	130	300
# Outer Metal Doors			1	1	1	1	2	3
# Inner Glass Doors			1	1	1	1	2	3
Volume of Steam Space		ft ³	3.2	5.9	10.8	18.7	31	61.9
		liters	91	167	305	530	878	1753
Operation Temperature	From -20°C	Up to °C	100	100	100	100	100	100
Temperature Accuracy	Distribution @ 10°C	± °C	<0.5	<0.5	<0.5	<1	<1	<0.6
	Distribution @ 37°C	± °C	<0.5	<0.5	<0.5	<1	<1	<0.5
	Uniformity	± °C	<0.2	<0.2	<0.2	<0.3	<0.4	<0.2
Heating Time to 37°C From the Ambient Temperature		Minutes	<11	<11	<11	<13	<13	<30
Cooling Down Time From 22°C to 10°C		Minutes	<21	<21	<17	<19	<21	<21
Recovery time after door opened for 30 s according to DIN 12880	@ 37°C	Minutes	<5	<5	<2	<2	<6	<10
	@ 50°C	Minutes	<6	<6	<3	<4	<6	<10
Heat Emission	@ 37°C	W	55	70	63	123	148	200
CO2 Concentration		%	0.1 – 20		-		0.1 – 20	
CO2 Required Pressure		Bar/PSI	0.3-0.7/5--10		-		0.3-0.7/5--10	
Noise Level of Complete Device		dB	45	46	50	56	58	60
Electrical Data	Max Consumption 50/60Hz	W	700/850**	1000/1150**	1150/1300**	1700	2000/2050**	2500/3300**
		A	7.6	7.7/10	9.2/11.2	16	17.9	11.6
		V	115	115	115	115	115	230
IP Code			IP20	IP20	IP20	IP20	IP20	IP20
Weight	Net	lbs	209.4	242.5	315.3	507.1	565.2	1201.5
		kg	95	110	143	230	270	545
	Gross	lbs	396.8	485	579.8	859.8	1102.3	1907
		kg	180	220	263	390	500	865
Weight -20°C	Net	lbs	231.5	44.1	337.3	551.2	639.3	1201.5
		kg	105	120	153	250	290	545
	Gross	lbs	419	507.1	601.9	881.8	1124.4	1907
		kg	190	230	273	400	510	865

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**Value at cooling down to -20°C