



Temperature Control Incubator & Stability



BETATEK INC.
Instrumentation Superbly Supported
L'instrumentation à son meilleur

654 Petrolia Road,
Toronto, ON M3J 2W3
Tel: (416) 736-6166
Toll-Free: (800) 387 3570
Fax: (416) 736-9346



Temperature Control Incubators & Stability

Assuring Your Quality



Biology & Microbiology

Testing and growth of bacteria cultures and microorganisms



Research & Laboratory

Testing and growth of bacteria cultures and microorganisms



Plant Growth

Simulating environmental conditions for agricultural applications; germination, Arabidopsis, green plant growth, plant tissue culture, crops and fruits



Cosmetics

Stability and durability testing of cosmetic products



Food Science, QA & QC

Stability testing and photo stability testing of food products including shelf life studies

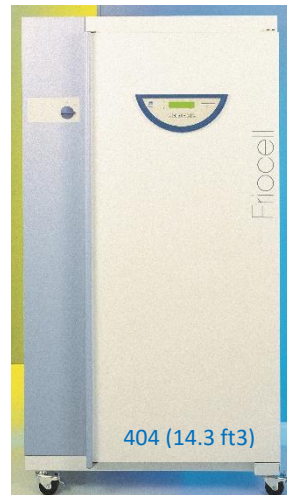


Aerospace, Auto, Industrial

Testing of materials quality and durability; adhesives, textiles, seals, composites, components & electronics



55 (2 ft3)



404 (14.3 ft3)

The **FrioCell** allows exact incubation while **maintaining precise temperature control**.

The unique cooling system ensures that samples do not over dry. Each unit can be equipped with high performance lighting for growth and testing of products. The patented forced air convection ensures even temperature distribution throughout the entire chamber. Ideal for use in food labs, biological laboratories, plant science, cosmetics, materials testing and chemical industries. **Elevate sterilization standards with BMT's unique double chamber design and removable inner chamber.**

Forced Air / Mechanical Convection

Chamber Volumes 22, 55, 111, 222, 404, 707 liters

.8, 2, 4, 8, 14.3, 25 ft3

Working temperature 0.0°C up to 99.9°C (FC 22: 5°C to 70°C)

Compliant with FDA and ICH guidelines

Patented Forced-Air system

Access ports 25 mm (1"), 50 mm (2"), 100 mm (4")

Double Wall Removable inner chamber for cleaning

Chamber AISI seamless stainless steel w/ rounded corners

Fuzzy Logic ensures accurate temperatures w/out overshooting & flexible and repeatable cycles

Smart Handle with four-point locking

Features

- removable inner chamber walls for cleaning and sterilization
- smart handle with 4-point locking
- RS 232 – interface for printer or PC-communication, Ethernet option.
- delayed heating start and stop function
- acoustic and visual alarms
- digital safety thermostat
- real time
- program temperature ramps
- heating sequences
- programming cycles
- patented air flow and adjustable forced air fan rate 10 to 100 %
- AISI 304 stainless steel chamber w/ rounded corners
- manual control of air exhaust port

Comfort Control Panel



- short recovery times
- fuzzy logic ensures there is no temperature overshooting.
- 6 programs with up to 40 segments, for varying loads and parameters
- chip card system for individual program storage and administrator security
- time range 0 – 16 years with 1 min. intervals
- Clear user friendly LCD display

Options

- 9.9 °C cooling and automatic defrost
- Fluorescent lighting including ICH Q1B
- Shelf lighting – programmable time and intensity, fluorescent VIS and UV
- Door lighting – programmable time and intensity, fluorescent VIS
- stainless steel access ports 25, 50, 100 mm
- automatic door lock
- programmable water proof inner socket
- lighting sensor UV & VIS (-10–70 °C)
- BMS – monitoring system relay alarm contacts
- PT 100 flexible sensors
- WarmComm 4.0 software: Bidirectional & FDA 21 CFR part 11
- Stainless steel exterior
- AISI 316 stainless steel chamber
- IQ / OQ protocols
- 9-point temperature mapping

FRIOCELL	Technical Data	Model	22	55	111	222	404	707
Interior dimensions Chamber: stainless steel	volume	ft3	0.78	1.9	3.9	7.8	14.3	25
		liters	22	55	111	222	404	707
	width	inches	9.6	15.75	21.25	21.25	21.25	37
		mm	244	400	540	540	540	940
	depth	inches	12.1	14.6	14.6	20.5	20.5	20.5
		mm	307	370	370	520	520	520
	height	inches	11.7	13.8	20.9	29.9	55.6	55.6
		mm	296	350	530	760	1410	1410
Volume of the steam space		ft3	1.5	3.1	5.8	10.6	18.5	31
		liters	43	89	163	299	524	876
Shelves:	number of shelf guides in chamber	max. number	4	4	7	10	19	19
stainless steel	side walls	standard #	2	2	2	2	2	2
Shelf distance	min. distance between trays	inches	2.4	2.8	2.8	2.8	2.8	2.8
		mm	60	70	70	70	70	70
Useable shelf area	width x depth	inches	7.3x10.4	15x13.2	20.5x13.3	20.5x19.1	20.5x19.1	36.3x19.1
		mm	185x265	380x335	520x338	520x485	520x485	920x485
Outer metal doors		No.	1	1	1	1	1	2
Inner glass doors		No.	1	1	1	1	1	2
Maximum shelf load	one shelf	lbs	22	44	44	66.1	66.1	110.2
		kg	10	20	20	30	30	50
	total per unit	lbs	55.1	110.2	110.2	154.3	220.5	286.6
		kg	25	50	50	70	100	130
Electric parameters	max consumption	W	1380	1610				1690
<i>230V option available</i>	50/60 Hz	V	115	115	115	115	115	115
Protective system			IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Temperature Data								
Working temperature	range °C		+5°C – +7°C	0 – 99.9	0 – 99.9	0 – 99.9	0 – 99.9	0 – 99.9
Temperature Distribution	at 10°C	± °C	<0.3	<0.5	<0.5	<0.5	<1	<1
	at 37°C	± °C	<0.3	<0.5	<0.5	<0.5	<1	<1
Temp. Uniformity		± °C	<0.1	<0.2	<0.2	<0.2	<0.3	<0.4
Heating up time from ambient temp.	to 37°C	min.	<10	23	24	25	26	27
Cooling down time	from 22°C to 10°C	min.	<31	<14	<21	<21	<21	<21
Recovery time after 1 min. door open	at 37°C	min.	1	1	1.5	1.5	1.5	1.5
	at 50°C	min	2.5	1.5	2	2.5	5.5	3.5
Heat Emission	at 37°C	W	50	62	70	97	123	148
External dimensions (incl. door / handle, feet / rollers)	width	inches	15	24.4	30	30	39.8	57.5
		mm	406	620	760	760	1010	1460
	depth	inches	23.3	25.2	25.2	31.1	31/1	31/1
		mm	592	640	640	790	790	790
	height	inches	23.8	32.3	39.4	48.5	75.3	75.3
		mm	605	820	1000	1230	1910	1910
Weight	net	lbs	72.8	176.4	222.7	291	507	595.2
		kg	33	80	101	132	230	270
	gross	lbs	83.8	218.3	288.8	372.6	696.2	696.7
		kg	38	99	131	169	270	316

Note: All technical data is related to 22 °C ambient temperature and +/- 10% voltage swing (if specified). For other parameters see section: Electrical connections. Temperature and humidity variation occurs in the case of consistent air-flow during operation.

- No more than 50% of the tray should be filled in order to facilitate uniform air circulation inside the chamber

BMT USA, 14532 169th Dr. SE, Suite 142, Monroe, WA 98272 USA

ph. 360-863-2252

fax 360-863-2366

e-mail sales@bmtus.com

www.bmtus.com



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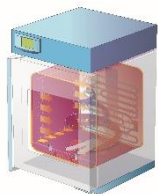
Food Science & Packaging

Stability testing and photo stability testing of food products including shelf life studies



BOD Water, Waste-Water

Testing of water quality in municipal water plants (BSK5 at 5°C)



Air Flow System



707 (25 ft3)



222 (8 ft3)



1212 (43 ft3)

The FRIOCELL EVO is the evolution in BMT chambers, designed to create exact and reproducible simulation of environmental conditions including but not limited to microbiology, plant growth, photostability and stability. Fully conforms with ICH stability & photostability norms. Complete data reporting, evaluation and security with Warmcomm 4.0F Software, **FDA 21 CFR part 11 conformity**.

The EVOs' all stainless steel (AISI 304) double-wall chamber design (main & inner chamber) allows for long life expectancy of the unit and elevates contamination control by facilitating easy cleaning and sterilization.

The BMT patented air-flow system creates precise conditions and validated process.

Forced Air / Mechanical Convection: Patented Air flow system moving air both vertically and horizontally

Chamber Sizes:

Liters (Ft3) 55 (2), 111 (4), 222 (8), 404 (14.3), 707 (25), 1212 (43)

Working Temperature Range: 0.0 °C up to 100 °C

Lighting: VIS & UV shelf & door lighting – LED and Fluorescent

Fully programmable light intensity, microprocessor dimming 0 – 100%

111 & 222: up to 2 shelf lights, 404, 707 & 1212: up to 3 shelf lights

VIS Shelf lighting 400 – 700 (nm), UV 300 – 400(nm)

Reflective stainless steel surfaces & Flexibility of shelf placement

Power: 115V & 230V 50 / 60Hz

EVO Features

- removable inner chamber for cleaning and sterilization
- AISI 304 seamless stainless steel chamber & shelves w/ rounded corners
- Data encryption FDA 21 CFR Part 11
- Multi-level user admin., FDA 21 CFR Part 11
- fuzzy Logic "learning logic" microprocessor
- Continuous indication of temp., CO2 (optional) concentration, time & alarm
- Audio and visual alarm
- digital independent safety thermostat
- RS232 communication. Optional Ethernet
- 5 layers of insulation for precise internal chamber uniformity
- patented forced air system and adjustable from 1% to 100 %
- fuzzy logic microprocessor controlled humidification and de-humidification

EVO Color LCD Touch Screen



- LCD touch screen display, simple icon navigation
- Glove friendly touch screen
- 100 programs – 100 segments – for varying loads and parameters
- SD card data storage in CSV and real time graph of the process
- Graph display of cycle parameters
- 30 day data logger with graphs
- High process security – users protected by passwords (5 users, 1 admin)
- program temperature ramps, real time, heating sequences and cycling
- delayed heating start and stop
- Graphic display of cycle parameters

Optional Lighting: LED & Fluorescent

- Programmable lighting is 1% increments of intensity
- shelf lighting – VIS LED & Fluorescent
- door lighting – VIS LED & Fluorescent
- shelf lighting - VIS / UV fluorescent lighting for ICH Q1B compliance

Options

- Communication Plus: WiFi, Ethernet & USB device
- -20°C & Automatic Defrost
- light sensors 10 - 70°C
- access ports 25 (1"), 50 (2"), 100 (4")
- automatic door lock or key lock
- 160°C sterilization cycle
- water proof inner socket 115V
- BMS monitoring alarm contact
- flexible PT 100 sensor
- WarmComm 4.0P & 4.0 FDA software
- Stainless steel exterior
- AISI 316 stainless steel chamber



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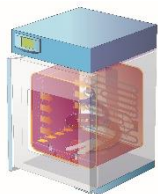
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Reflective stainless steel surfaces & Flexibility of shelf placement

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- Continuous indication of temp., CO2 (optional) concentration, time & alarm
- Audio and visual alarm
- digital independent safety thermostat
- RS232 communication. Optional Ethernet
- 5 layers of insulation for precise internal chamber uniformity
- patented forced air system and adjustable from 1% to 100 %
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- AISI 316 stainless steel chamber

FRIOCELL® EVO (FC EVO)			55	111	222	404	707	1212
Technical data Internal space - chamber, stainless steel DIN 1.4301 (AISI 304)	volume	cca l	54	110	219	404	704	1408
	volume	ft3	1.9	3.9	7.8	14.3	25	43
	width	mm	400	540	540	540	940	3x540
		inch	16	21.3	21.3	21.3	21.3	21.3
	height	mm	355	535	765	1415	1415	1415
		inch	14	21	30	56	56	56
	depth	mm	380	380	530	530	530	530
		inch	15	15	21	21	21	21
Volume of the steam space		cca l	91	167	305	530	878	1753
External dimensions (including door, Handle H and wheels W)	width	mm	640	780	780	1100	1500	2530
		inch	25	31	31	43	59	99.6
	height	mm	940H	1215H	1450H	1880W	1880W	1915W
		inch	37	47.8	57	74	74	75.4
	depth	mm	755	755	885	885	885	885
		inch	29.7	29.7	36	35	35	35
Package – dimensions (three-layers carton)	width	cca mm	820	890	950	1340	1680	2750
	depth	cca mm	1290	1590	1740	2200	2200	2230
	height (incl. palette)	cca mm	980	890	1070	1060	1060	1130
Weight	net	kg	110/120**	110/120**	143/153**	240/250**	280/290**	519/545**
		lbs	243/265	243/265	315/337	529/551	617/639	1144/1202
	Gross (carton)	kg	140/150**	140/150**	162/172**	280/290**	326/336**	803/829**
		lbs	309/331	309/331	357/379	716/639	719/741	1770/1828
Shelves of stainless steel *	trays	max. No.	5	7	10	19	19	3x19
	standard equipment	pcs.	2	2	2	2	2	6
	min. distance	mm inch	70 2.8	70 2.8	70 2.8	70 2.8	70 2.8	70 2.8
	Storage area (w x d)	mm	380x335	520x335	520x485	520x485	920x485	520x485
Maximal load *	per 1 screen	kg/screen	20	20	30	30	50	30
	for a shelf	kg/shelf	20	20	30	30	50	30
		lb/shelf	44	44	66	66	110	110
	total inside of device	kg/chamber	50	50	70	100	130	300
		lb/chamber	110	110	154	220	287	661
Number of outer metal doors		psc.	1	1	1	1	2	3
Number of inner glass doors		psc.	1	1	1	1	2	3
Electrical data	maximum power requirement without decontamination	W	700/850**	1000/1150**	1150/1300**	1700/1700**	2000/2050**	2500/3300*
	maximum power requirement with decontamination	W	700/850**	1000/1150**	1150/1300**	1700/1700**	2600/2650**	2500/3300*
	50/60 Hz	V	115	115	115	115	115	230
	protective system		IP20	IP20	IP20	IP20	IP20	IP20
Temperature data Working temperature	from 0.0°C from -20.0°C	to °C to °C	100 (decontamination 160°C) 100 (decontamination 160°C)					70 70
Temperature accuracy	distribution at 10°C	cca (±) °C	<0.5	<0.5	<0.5	<1	<1	<0.6
	uniformity	cca (±) °C	<0.2	<0.2	<0.2	<0.3	<0.4	<0.5
Heating/up time to 37°C from ambient temperature	min		<11	<11	<11	<22	<13	<30
Cooling/down time from 22°C to 10°C	min		<21/<11**	<21/<11**	<17/<14**	<19/<11**	<21/<22**	<21
Recovery time after 30 s of door opening according to DIN 12 880	at 37°C	min	<5	<5	<2	<10	6	10
	at 50°C	min	<6	<6	<3	<13	6	10
Heat emission	at 37°C	cca W	55	70	63	123	148	200
Complete device noise level		dB	45/50**	46/52**	50/56**	56/58**	58/65**	60
CO₂ concentration		%	0.1 - 20				-	0.1 - 20
Required pressure CO₂		bar/psi	0.3 - 0.7/5 -10**				-	0.3-0.7/5-10**

*Approx. 50% of the tray area can be filled to allow for proper air circulation is enabled inside the chamber.

** Value at cooling up to -20°C.

Note: All technical data are related to 22°C ambient temperature and ± 10% voltage swing (if not specified). For other parameters see section Electric connections. Change in the design and make reserved