

CO2 incubator with additional process controls

The BINDER CO2 incubator CB series is the premium class for all sensitive incubation applications and best cell growth. Even during complex cultivation experiments or individual environments under hypoxic conditions, it is easy to grow thanks to a comprehensive assortment of options and accessories.



Advantages:

- Hot air sterilization at 180 °C
- Seamless, deep-drawn inner chamber made of stainless steel
- Unique BINDER technology (patented air jacket system, controlled condensation, etc.)

Areas of application:



Bio Tissue Engineering



In vitro Fertilization (IVF)



Clinics / University Hospitals

Features	Customer benefits	Characteristics
Sterilization	• Complete elimination of bacteria, spores, etc. • Reliable sterilization of the atmosphere and all surfaces • Minimal sterilization costs	180 °C hot air sterilization • Standards compliance, meets all relevant standards • Automatic sterilization process
Permadyr TM humidity system	• Uniform osmotic cell pressure • Optimum cell growth even with microwell plates • No Provides no sources of contamination.	Controlled humidification system • Defined recondensation point • Dry interior walls • High humidity • Rapid humidity recovery times • Simple water exchange through water pan
APT.line TM heating technology	• Optimal, uniform cell growth throughout the inner chamber	Preheating chamber with VENTAIRTM air jacket • Homogeneous temperature distribution • Rapid recovery after temperature drop • Accurate temperature control
Gas distribution	• Stable pH value	Gas mixing head with venturi effect • Homogeneous CO₂ distribution • Fast effective aeration
Inner chamber concept	• Easy cleaning • Fully usable volume 53, 150, 210 l • No Provides no sources of contamination.	Seamless, deep-drawn inner chamber • Integrated shelf support system • Burr-free stainless steel perforated sheets with tilt protection
CO ₂ measurement	• Stable pH value even with frequent door opening • Long-term stable system • Low maintenance costs	Single-beam infrared sensor • Rapid response time • Measures CO₂ in real-time • Independent of gas and humidity
Operating costs	• Minimal operating costs • Time savings	• Minimal work and material costs for sterilization

- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and best cell growth
- Temperature range from 7 °C above ambient temperature to 60 °C
- MCS controller for temperature and CO2 concentration
- User-friendly LCD screen
 - Easy-to-read menu guide
 - Integrated electronic chart recorder
 - Variety of options for the graphic display of process parameters
 - Real time clock
- Standard-compliant hot air sterilization at 180 °C (DIN 58947)
- VENTAIR Jacket System™
- Drift-free infrared CO2 measurement system
- Patented Gas mixing nozzle
- Permadyr System - condensation-free double-pan humidification system
- Seamless deep-drawn inner chamber made of stainless steel with integrated shelf support system (flanges)
- Electronic self-diagnostic system for errors with visual and audible alarms, as well as relay potential changeover contact for central monitoring
- Independent temperature safety device class 3.1 (DIN 12880) with optical and audible temperature alarm
- Tightly-fitted inner glass door
- RS 422 interface for communication software APT-COM™ DataControlSystem
- 3 perforated, stainless steel shelves with standard equipment and O2 control, 2 perforated stainless steel shelves for CB 53 with standard equipment and O2 control
- Units are stackable with stacking adapter
- Door lock
- BINDER test confirmation

CB 210

► Exterior dimensions	
Width (mm)	740
Height (incl. feet) (mm)	1070
Depth (plus 54 mm for door handle and connection) (mm)	715
Wall clearance side / rear (mm)	50 / 100
Number of doors (ea.)	1
Inner glass door(s)	1
► Interior dimensions	
Width (mm)	560
Height (mm)	750
Depth (mm)	500
Interior volume (l)	210
Stainless steel shelf (number standard/max.)	3 / 8
Dimensions of shelf, width x depth (mm)	555,5 x 444
Load per shelf (kg)	10
Permitted total load (kg)	30
Weight (empty) (kg)	121
► Temperature data	
Temperature range approx. 7 °C above ambient temperature to (°C)	60
Temperature variation at 37 °C (± K)	0,4
Temperature fluctuation (± K)	0,1
Recovery time after door was opened for 30 sec. at 37 °C (min) 1)	3
► Humidity data	
Humidity (% RH)	95
► CO2 data	
CO2 range (% CO2)	0-20
Setting accuracy (Vol.-% CO2)	0,1
Recovery time after door was opened for 30 sec. at 5 vol. % (min.) 1)	9
CO2 measurement	IR
Connection hose nozzle for CO2 DN 6 for hose with internal diameter (mm)	6

CB 210

► O2 data	
O2 range (Vol.-% O2)	0,2 - 95
Setting accuracy (Vol.-% O2)	0,1
Recovery time after door was opened for 30 sec. (min.) 1)	
at 1.0 vol. % O2 (min.)	54
at 5.0 vol. % O2 (min.)	11
O2 measurement	ZrO2
Gas connection hose nozzle for O2 / N2 DN 6 for hose with internal diameter (mm)	6
► Electrical data	
Voltage (± 10%) 50 / 60 Hz (V)	230
Nominal power (kW)	1,5
Energy consumption at 37 °C (W) 2)	130

1) up to 98 % of the set value

2) These values can be used for dimensioning air condition systems.

All technical data are specified for units with standard equipment at an ambient temperature of 25 °C and a line voltage fluctuation of ±10%. The temperature data is determined in accordance to factory standard following DIN 12880, respecting the recommended wall clearances of 10% of the height, width and depth of the inner chamber. All figures are typical average values for series devices. We reserve the right to alter technical specifications at any time.



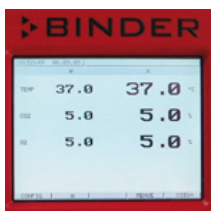
BINDER Gas Supply Service

The external tank changer makes automatic changeover to a second tank possible once the first tank is empty. It has acoustic and visual alarms and is equipped with a zero-voltage alarm output for extreme notification systems. It can be used for maximum two CO₂ incubators and is suitable for CO₂, O₂ and N₂ tanks.



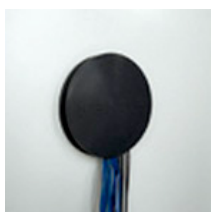
Gas-tight, 6-way divided inner glass door

For stable climate conditions in the broad chamber. Minimal loss of humidity, heat, and CO₂ when loading. Ensures short recovery times.



Control for variable O₂ values

For hyper- or hypoxic culture conditions. The O₂ or N₂ gas supply can be controlled using an additional control loop as needed. A zirconium oxide sensor (ZrO₂) is used for the measurement.



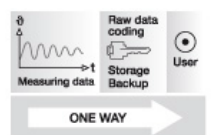
Silicone access ports

For introducing external measuring instruments into the chamber. The access ports have a diameter of 30 mm and can be sealed on both sides using a silicone plug. They can be positioned on the back, left, and right sides.



Stacking frame

For staking two BINDER CO₂ incubators



APT-COM™ DataControlSystem GLP Edition

Software for GLP-compliant control, programming and documentation. Allows networking of up to 30 devices or controllers. Meets FDA 21 CFR Part 11 requirements.



Calibration certificate & validation

BINDER can significantly reduce the workload in qualifying and validating devices. Nobody knows our devices as well and has as much experience in certifications as we do.

CB 210

Silicone access port with two silicone plugs, 30 mm, left side	O
Silicone access port with two silicone plugs, 30 mm, right side	O
Silicone access port with two silicone plugs, 30 mm, back	O
Lockable controller keyboard	O
Gas tank connection set for CO ₂ consisting of a gas tank pressure regulator (max. pressure 10 bar) with connection parts and 5 m hose	O
Gas tank connection set for O ₂ consisting of a gas tank pressure regulator (max. pressure 10 bar) with connection parts and 5 m hose	O
Gas tank connection set for N ₂ consisting of a gas tank pressure regulator max. pressure 10 bar) with connection parts and 5 m hose	O
BINDER Gas Supply Service external gas tank replacement for connecting 2 gas tanks, either CO ₂ or N ₂ , with audible and visual alarms, as well as potential-free alarm output	O
Unit conversion from RS 422 to Ethernet interface	O
4 - 20 mA analog outputs for temperature and CO ₂ measurements (e.g. chart recorder connection) with 6-pin DIN socket (output not adjustable).	O
Switched LEMO inner chamber socket (coverable) and LEMO connector (max. current carrying capacity 230 V AC - 3 A) (protection class IP 65)	O
Independent Intelligent Fail Safe monitoring function. Unique safety function used to prevent unnoticed deviations of the CO ₂ concentration from the set value. Note: Not possible in conjunction with access ports or divided inner glass door	O
Calibration certificate for temperature and CO ₂ (temperature measurement in center / CO ₂ measurement performed using analyzed test gas at 37 °C and 5% CO ₂)	O
Calibration certificate for optional O ₂ control, O ₂ measurement with analyzed test gas 1% O ₂	O
Temperature measurement acc. to DIN 12880 (27 measuring points) at 37 °C or at specified temperature with measuring protocol and certificate	O
Manual for Primary Human Cell Culture, in English	O
Current feedthrough (8-pin) for low voltage with LEMO socket (pluggable) and LEMO plug	O
Internal CO ₂ tank changer for connecting 2 gas tanks. Precise control over the current condition of CO ₂ supply to incubator by means of alarm messaging and incident reporting	O
Internal CO ₂ tank changer for connecting 2 gas tanks with external connection for up to one additional CO ₂ incubator. Precise control over the current condition of CO ₂ supply to incubator by means of alarm messaging and incident reporting	O
Internal O ₂ and N ₂ tank changer for connecting 2 gas tanks each	O
Perforated shelf, stainless steel	O
Divided shelf (1 shelf level) for gas-tight divided inner glass door, stainless steel	O
Base on casters	O
Stable vibration-free stacking frame on casters with stop brake for direct and safe stacking of two units of the CB 210 series with locking device	O
Stacking adapter CB for direct thermal decoupled stacking of two units of the CB 210 series	O
CELLROLL Set, modular and expandable roller bottle system for cell cultivation, 6 roller bottles	O

BINDER CO₂-Incubators

Optimal cell growth - thanks to

- ▶ hot air sterilization at 180 °C
- ▶ seamless one-piece inner chamber
- ▶ unique BINDER technology (patented Air jacket system, Single condensation point,...)

Applications:



Bio Tissue Engineering



Cell Biology



Basic Research



In-Vitro Fertilization (IVF)



	BINDER features	Customer benefits	What the competition offers
Sterilization	State of the art 180 °C hot air sterilization - Hot air sterilization at 180 °C in accordance with standards - Automatic sterilization process	- Total elimination of germs, spores, etc. that could damage cell cultures - High availability at low operating cost, overnight sterilization procedure	- Disinfection does not eliminate all contamination, since not all germs, spores, etc. are destroyed - Expensive time and labor-intensive and complicated decontamination procedure
Permadyry humidification	Single Point Condensation and humidification system - Dry inner walls at all times - Rapid humidity recovery - High humidity	- No contamination to damage your cell cultures - Osmotic cell pressure is balanced - Optimum cell growth. This is especially important when cultivating open cultures in microwell plates	- Wet inner walls or doors promote contamination - Contamination can destroy your cell cultures
APT.line™ Ventair air jacket	Air jacket heating system - Homogenous temperature distribution - Rapid temperature recovery, precise temperatures	Optimum cell growth in the entire inner chamber	- Sluggish temperature recovery, especially with water jacket systems - Uneven temperature distribution
Unique Gas mixing head	Unique Gas mixing head with venturi effect - No fan ▶ no contamination of cell cultures with airborne particles - Homogenous CO₂ distribution	- No contamination to damage your cell cultures - Stable pH for optimum cell growth	- Use of fans can contaminate cell cultures with airborne particles. HEPA filters represent an additional risk of trapping contamination below the chamber ceiling. Risk of recontamination - Risk of unsatisfactory pH conditions
One piece inner chamber	Seamless chamber with built-in shelf supports - Unique, easy-to-clean seamless design - No fittings in the interior chamber means optimum space utilization	- No contamination to damage your cell cultures - Large working space	- Labor and time-intensive cleaning procedure, because of multiple interior fittings in the chamber which must be removed for cleaning - The numerous interior fittings particularly reduce the available working space
IR Sensor	pH stability independent from humidity - IR sensor measures immediately after door is opened - Rapid CO₂ recovery after door is opened; buffer solution pH remains constant even when door is frequently opened	- Ensures optimum cell growth even when door is frequently opened - IR is independent measuring of CO₂/pH	- Low quality TC sensor cannot measure CO₂ concentration for about 30 minutes after the door is opened, because TC sensors need stable humidity to measure the CO₂ concentration - Unstable buffer solution pH when door is opened frequently
Cost of ownership	- Requires no HEPA filter replacement - Fully automatic hot air sterilization at 180 °C, compliant with standards - No manual / chemical cleaning	- Low operating cost - Low cost of ownership	- Between \$ 670 and \$ 1140 annual cleaning cost (labor and material) per year - Requires cleaning at least once a month

► Product program at a glance



	C 150	CB 53	CB 150	CB 210
Interior volume (l/cu.ft.)	150 / 5.4	53 / 1.9	150 / 5.4	210 / 7.5
Interior dimensions (mm/inch)				
Width	500 / 19.7	400 / 15.7	500 / 19.7	560 / 22.1
Height	600 / 23.6	400 / 15.7	600 / 23.6	750 / 29.5
Depth	500 / 19.7	330 / 13.0	500 / 19.7	500 / 19.7
Exterior dimensions (mm/inch)				
Width	680 / 26.8	580 / 22.8	680 / 26.8	740 / 29.1
Height	819 / 32.2	720 / 28.3	919 / 36.2	1069 / 42.1
Depth*	815 / 32.1	546 / 21.5	715 / 28.1	715 / 28.1
*plus 50 mm (2.2 inch) I-triangle, door handle and connections				
Temperature range	7 °C / 13 °F above ambient up to 50 °C / 122 °F	5 °C / 9 °F above ambient up to 60 °C / 140 °F	7 °C / 13 °F above ambient up to 60 °C / 140 °F	7 °C / 13 °F above ambient up to 60 °C / 140 °F
CO ₂ - range (Vol.-%CO ₂)	0 - 20	0 - 20	0 - 20	0 - 20
Humidity values (% RH)	≤ 95	≥ 95	≥ 95	≥ 95
Recovery time after door was opened for 30 sec. at 37 °C (98.6 °F) (Min)	5	3	3	3

► Options



Gas-tight, divided inner
glass door (CB series)



O₂ controller
(CB series)



Gas Supply
Control Unit



Stacking frame

Additional information

- Catalog Scientific products
- Flyer CO₂ incubators



WolfLabs

Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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Please contact us if this literature doesn't answer all your questions.