

CO2 incubator with additional process controls

The BINDER CB series CO2 incubator is the premium class among the CO2 incubators. It is suitable for all sensitive incubation applications and ensures optimal cell growth. A BINDER CO2 incubator of the CB series is up to even complex cultivation experiments or individual environments.



Advantages:

- Hot air sterilization at 180 °C (356 °F)
- 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	<ul style="list-style-type: none"> • Complete elimination of bacteria, spores, etc. • Reliable sterilization of the atmosphere and all surfaces • Minimal sterilization costs 	180 °C (356 °F) hot air sterilization <ul style="list-style-type: none"> • Standards compliance, meets all relevant standards • Automatic sterilization process
Permadry™ humidity system	<ul style="list-style-type: none"> • Uniform osmotic cell pressure • Optimum cell growth even with microwell plates • No Provides no sources of contamination. 	Controlled humidification system <ul style="list-style-type: none"> • Defined recondensation point • Dry interior walls • High humidity • Rapid humidity recovery times • Simple water exchange through water pan
APT.line™ heating technology	<ul style="list-style-type: none"> • Optimal, uniform cell growth throughout the inner chamber 	Preheating chamber with VENTAIR™ air jacket <ul style="list-style-type: none"> • Homogeneous temperature distribution • Rapid recovery after temperature drop • Accurate temperature control
Gas distribution	<ul style="list-style-type: none"> • Stable pH value 	Gas mixing head with venturi effect <ul style="list-style-type: none"> • Homogeneous CO2 distribution • Fast effective aeration
Inner chamber concept	<ul style="list-style-type: none"> • Easy cleaning • Fully usable volume 53, 150, 210 l • No Provides no sources of contamination. 	Seamless, deep-drawn inner chamber <ul style="list-style-type: none"> • Integrated shelf support system • Burr-free stainless steel perforated sheets with tilt protection
CO2 measurement	<ul style="list-style-type: none"> • Stable pH value even with frequent door opening • Long-term stable system • Low maintenance costs 	Single-beam infrared sensor <ul style="list-style-type: none"> • Rapid response time • Measures CO2 in real-time • Independent of gas and humidity
Operating costs	<ul style="list-style-type: none"> • Minimal operating costs • Time savings 	<ul style="list-style-type: none"> • Minimal work and material costs for sterilization

- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and best cell growth
- Temperature range from 5 °C (9 °F) above ambient temperature to 60 °C (140 °F)
- 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 (356 °F) (DIN 58947)
- VENTAIR™ Jacket System
- Drift-free infrared CO2 measurement system
- Patented Gas mixing nozzle
- Permadyr System - condensation-free double-pan humidification system, maintains dry interior walls
- 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
- 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 53

▶ Exterior dimensions	
Width (mm/inch)	580 / 22.8
Height (incl. feet) (mm/inch)	720 / 28.3
Depth (plus 55 mm (2.2 inch) for door handle and connection) (mm/inch)	550 / 21.7
Wall clearance side (mm/inch)	50 / 1.97
Wall clearance rear (mm/inch)	100 / 3.94
Number of doors (ea.)	1
Inner glass door(s)	1
▶ Interior dimensions	
Width (mm/inch)	400 / 15.7
Height (mm/inch)	400 / 15.7
Depth (mm/inch)	330 / 13.0
Interior volume (l/cu.ft.)	53 / 1.9
Number of shelves (standard/max.)	2 / 3
Dimensions shelves width x depth (mm/inch)	396 x 289 / 15.6 x 11.4
Load per shelf (kg/lbs.)	10 / 22.0
Permitted total load (kg/lbs.)	30 / 66.1
Weight (empty) (kg/lbs.)	60 / 133
▶ Temperature data	
Temperature range from 5 °C (9 °F) above ambient temperature to (°C/°F)	60 / 140
Temperature variation at 37 °C (± K)	0.3
Temperature fluctuation at 37 °C (± K)	0.1
Recovery time after door was opened for 30 sec. at 37 °C (98.6 °F) (min.) 1)	3
▶ Humidity data	
Humidity (±2% r.h.)	95
▶ CO2 data	
CO2 range (vol. % CO2)	0 - 20
Setting accuracy (Vol.-% CO2)	0.1
Recovery time after door was opened for 30 sec. 1)	
at 5.0 vol. % CO2 (min.)	6
CO2 measurement	IR
Connection hose nozzle for CO2 for hose with internal diameter (mm/inch)	6 / 0.24

CB 53

▶ O2 data	
O2 range (vol. % O2)	0.2 - 95
Setting accuracy (Vol.-% O2)	0.1
Recovery time after door was opened for 30 sec. 1)	
at 1.0 vol. % O2 (min.)	25
at 5.0 vol. % O2 (min.)	9
O2 measurement	ZrO2
Connection hose nozzle for O2 / N2 for hose with internal diameter (mm)	6 / 0.24
▶ Electrical data	
Voltage (± 10%) 50/60 Hz (V)	230
Voltage (± 10%) 60 Hz (V)	115
Nominal power (kW)	1.0
Energy consumption at 37 °C (98.6 °F) (W) 2)	70

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 (77 °F) 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.



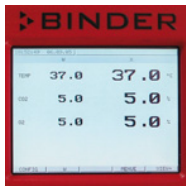
BINDER Gas Supply Service

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.



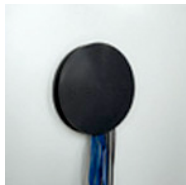
Gas-tight, 4-way divided inner glass door

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.



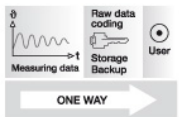
Silicone access ports

For introducing external measuring instruments into the chamber. The access ports have a diameter of 30 mm (1.2 inch) and can be sealed on both sides using a silicone plug. They can be positioned on the back, left, and right sides.



Stacking adapter

Used for stacking of two CB incubators which are thermally isolated from each other. The incubators can thus be sterilized with hot air independent of each other. Available as stacking adapters, stacking frames or base frames.



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 53

Silicone access port with two silicone plugs, 30 mm (1.2 inch), back	<input type="radio"/>
Lockable controller keyboard	<input type="radio"/>
Gas tank connection set for CO ₂ consisting of a gas tank pressure regulator (max. pressure 10 bar) with connection parts and 5 m (16.4 ft.) hose	<input type="radio"/>
Gas tank connection set for O ₂ consisting of a gas tank pressure regulator (max. pressure 10 bar) with connection parts and 5 m (16.4 ft.) hose	<input type="radio"/>
Gas tank connection set for N ₂ consisting of a gas tank pressure regulator max. pressure 10 bar) with connection parts and 5 m (16.4 ft.) hose	<input type="radio"/>
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	<input type="radio"/>
Unit conversion from RS 422 to Ethernet interface	<input type="radio"/>
4 - 20 mA analog outputs for temperature and CO ₂ measurements (e.g. chart recorder connection) with 6-pin DIN socket (output not adjustable)	<input type="radio"/>
Switched LEMO inner chamber socket (coverable) and LEMO connector (max. current carrying capacity 230 V AC - 3 A) (protection class IP 65)	<input type="radio"/>
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	<input type="radio"/>
Calibration certificate for temperature and CO ₂ (temperature measurement in center / CO ₂ measurement performed using analyzed test gas at 37 °C (98.6 °F) and 5% CO ₂)	<input type="radio"/>
Calibration certificate for optional O ₂ control, O ₂ measurement with analyzed test gas 1% O ₂	<input type="radio"/>
Temperature measurement acc. to DIN 12880 (27 measuring points) at 37 °C (98.6 °F) or at specified temperature with measuring protocol and certificate	<input type="radio"/>
Manual for Primary Human Cell Culture, in English	<input type="radio"/>
Perforated shelf, stainless steel	<input type="radio"/>
Shelf, stainless steel for divided gas-tight inner glass door	<input type="radio"/>
Base on casters	<input type="radio"/>
Stacking adapter for direct thermal decoupled stacking of two C 53 CO ₂ incubators	<input type="radio"/>