



BINDER CO₂-incubators
C | CB



BINDER GmbH

Best conditions for your success.

BINDER is the leading name for perfect simulation of biological, chemical and physical environmental conditions. For years, our simulation chambers have been considered the best in the world. Our comprehensive range of products covers routine applications as well as highly specific jobs, providing unequalled precision in both.

You'll find that many of the advances in temperature chambers around the world originated from BINDER. The many patents we hold are impressive evidence of this fact. Our list of customers includes all of the best-known companies in 120 countries.

BINDER is known for maintaining the highest standards in research and development, as well as in manufacturing and quality assurance. Our products are developed consistently and with a clear focus on what we do best, namely climatic simulation technology, process technology, measurement and control technology, lighting technology, vacuum technology, and software solutions.

We maintain a clear lead in cutting edge technology.

Success is nothing new to us! We have been the uncontested leader in the development of simulation chambers for science and industry for years. Setting this standard has not been easy. It takes much more than just producing an outstanding product; it requires the correct philosophy. Because our job isn't finished when we file another new patent – that simply fuels our enthusiasm.

Admittedly, our love for detail and our penchant for cutting edge technology has something to do with it. However, it has also something to do with what our equipment accomplishes – namely improving the quality of life. Whether it concerns making certain that vital medical equipment will operate perfectly even under difficult climatic conditions, or simply ensuring that everyday items continue to function properly; or creating the foundations to not only reduce the harmful effects of genetic diseases and cancer, but to actually find cures for them, BINDER simulation chambers are helping to shape the future in all of these areas.

We are well aware of this responsibility, and that is why we are extremely proud of the confidence our customers have placed in us.

C | CB BINDER CO₂-incubators for best cell growth

Cell cultivation is a highly sensitive process, where a single germ can destroy weeks of work. We solve this problem with a unique and secure approach: Sterilization with hot air at 180 °C. Finely coordinated interaction of temperature precision, pH stability and saturated air humidity. The seamless, deep-drawn inner chamber, without intrusive fittings requires minimum manual cleaning. BINDER CO₂ incubators provides you with virtually perfect natural simulation to ensure optimum growth conditions for your cultures at all times.



Bio
Tissue Engineering



Cell Biology



Basic Research



In-Vitro-
Fertilization – IVF



Pharma

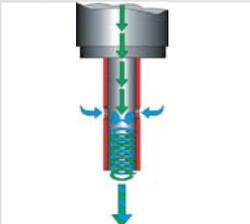
Facts you should know:



► Strong cell growth within optimum temperature range

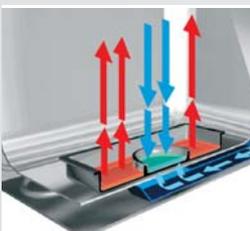
Temperature is a decisive factor for growth. The patented APT.line™ system with preheating chamber ensures high temperature precision with homogenous heat distribution in the interior.

Outstanding dynamics ensure short recovery times for all BINDER CO₂ incubators. An additional feature in the CB series is BINDER's patented VENTAIR™ jacket system with cascade control, which will achieve even shorter temperature recovery times. This provides reliable protection at any time, particularly for sensitive cultures.



► Homogenous gas distribution without turbulence

The patented gas mixing head provides totally homogenous gas distribution in the interior – without the use of a fan. Total elimination of mixing of germs through turbulence.



► Absolutely condensation-free, even at high air humidity levels

The high saturated air humidity prevents cell cultures from drying out and also keeps the osmolarity constant in the culture medium. However, in order to prevent contamination, no condensation must occur.

With our CO₂ incubators, work with a saturated relative air humidity up to 95% RH (C) or 98% RH (CB) is possible while maintaining completely dry interior walls. At the same time, an exactly defined ratio between evaporation and retrograde condensation is generated which will keep air humidity absolutely stable. The patented Permady™ system with the double-walled water pan permits even more accurate adjustment of humidity levels in the CB. This humidity control achieves even higher air humidity values up to 98% RH, absolutely free of condensation



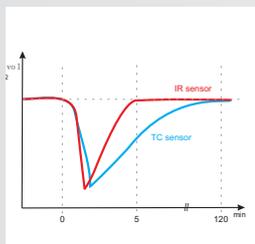
► Sterile cultivation conditions

Our validated and approved hot air sterilization at 180 °C [356 °F] complies with the most important international guidelines to ensure reliable destruction of germs which could interfere with your work. BINDER incubators offer an easy overnight sterilization cycle that requires no extra work, such as the removal of interior fittings, without additional maintenance costs for lamps, filters or other spare parts.



► Reduced surface contamination

An integrated sliding rack system has reduced the potential contamination surfaces in the seamless, deep-drawn interior chamber by 27 %. This reduces the risk from germs significantly and simplifies cleaning, since no internal fittings have to be removed



► Extremely stable pH conditions

The infrared measuring system with the drift-free single beam FPI sensor provides highly accurate CO₂ content measurement at all times, unaffected by the usual deviations during thermal conductivity measurement due to varying humidity content. This will balance any fluctuations after opening of the door, up to 20 times faster than normal

CB and C – A Direct Comparison

	C series	CB series
Standards-compliant hot air sterilization at 180 °C (DIN 58947, Pharmacopoeias, ANSI etc.)	✓	✓
Drift-free CO ₂ infrared absorption measuring system	✓	✓
Gas mixing head	✓	✓
Temperature control principle	Air jacket system	VENTAIR™ Jacket System
Humidification system	Water pan with built in condensation control	Permady™ System with adjustable condensation control for humidity values
Humidity values	? 95 % RH	? 95 % RH
Lockable door	✓	✓
Door handle on right or left	✓	—
O ₂ adjustment (0.2-95 vol.%)	—	option
Safety features	- Automatic diagnostic system - Zero-potential alarm contact	- Automatic diagnostic system - Zero-potential alarm contact - Intelligent Fail Safe Control (option)
Microprocessor control	- LED segment display for temperature and CO ₂ content - Alarm and status displays	- LCD color screen display - Adjustable display of all process parameters - Graphic alarm and status displays - Integrated electronic chart recorder
Applications	- Cell line cultivation - Cell culture techniques in basic research - Cell-based assays in life science disciplines	- Primary cell cultivation - Differentiation studies in stem cell research - Tissue Engineering - In-vitro fertilization (IVF) - Cancer research under hypoxic conditions - Suspension cultures in integrated systems - Compatibility studies - Drug screening - Suspensionskulturen in integrierten Systemen - Verträglichkeitsstudien

CB series

The All-rounder, with extra process control

The CB series is the premium class for all sensitive incubation applications. These incubators are suited for universal use in the laboratory, with an 'extra' in process control and safety for primary cell cultivation. Optional accessories, such as O₂ control for creating hypoxic growth environments, make the CB the ideal equipment for customized solutions.



Equipment:

- Electronically controlled APT.line™ preheating chamber
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments

Features:

- 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 180 °C (356 °F) hot air sterilization using an overnight cycletime
- VENTAIR™ Jacket System
- Drift free infrared CO₂ measurement system
- Gas mixing head
- Permady™ system – condensation-free double-pan humidification system, maintains dry interior walls
- Weldless deep-drawn inner chamber made of stainless steel with integrated shelf support system
- Electronic self-diagnostic system for errors with optical and audible alarm, as well as relay contact for central monitoring
- Independent adjustable temperature safety device class 3.1, providing full protection against chamber over-temperature, with visual and audible temperature alarm
- Tightly-fitting inner glass door
- RS 422 interface for use with optional GMP/GLP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControlSystem software
- 3 perforated shelves made of stainless steel (CB 53 – 2 shelves)
- BINDER test certificate

Technical data:

	CB 53	CB 150	CB 210
Interior Volume (Liter/qu.ft)	53 / 1.9	150 / 5.4	210 / 7.5
Interior dimensions (W/H/D) mm/inch	400 / 400 / 330 15.7/15.7/13.0	500 / 600 / 500 19.7/23.6/19.7	560 / 750 / 500 22.1/29.5/19.7
Exterior dimensions (W/H/D) mm/inch *plus 55mm/2.2 inch connection, door handle	580 / 720 / 546* 22.8/28.3/21.5*	680 / 919 / 715* 26.8/36.2/28.1*	740 / 1069 / 715* 29.1/42.1/28.1*
Temperature range	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
Humidity average value (% RH)	≥ 95	≥ 95	≥ 95
Recovery time after door was opened for 30 sec. at 37 °C (98.6 °F) (Min.)	3	3	3
Model no. (230 V 50/60 Hz)			
CB Standard	9040 - 0069	9040 - 0038	9040 - 0039
CB with O ₂ control	9040 - 0071	9040 - 0044	9040 - 0045
CB with divided glass doors	-	9040 - 0046	9040 - 0047
CB with O ₂ control and divided glass doors	-	9040 - 0052	9040 - 0053

C 150 series

The expert with real hot air sterilization

The C 150 is the perfect partner for routine cell culture applications without the threat of contamination. Used stand alone or in stacks the C 150 is easily accessible.



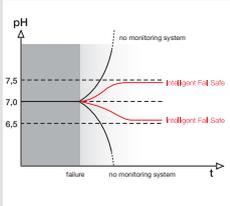
Equipment:

- Electronically controlled APT.line™ preheating chamber
- Microprocessor with LED display for temperature and CO₂-concentration
- Various alarm and status displays
- Lockable controller keyboard via 3 digit password
- Standard compliant 180 °C (356 °F) hot air sterilization using an overnight cycletime (acc to. DIN 58947, Pharmacopoeias, ANSI)
- Drift free infrared CO₂ measurement system
- Gas mixing head
- Weldless deep-drawn inner chamber made of stainless steel with integrated shelf support system
- Water pan with built-in condensation control
- Automatic diagnostic system with optical and audible alarm, as well as zero-voltage relay contact for central monitoring
- Independent adjustable temperature safety device class 3.1, providing full protection against chamber over-temperature, with visual and audible temperature alarm
- RS 422 interface
- Tightly-fitting inner glass door
- Lockable door
- 3 perforated shelves made of stainless steel
- BINDER test certificate

Technical data:

	C 150
Interior Volume (Liter/qu.ft)	150 / 5.4
Interior dimensions (W/H/D) mm/inch	500 / 600 / 500 19.7 / 23.6 / 19.7
Exterior dimensions (W/H/D) mm/inch *plus 55mm/2.2 inch connection, door handle	680 / 819 / 815* 26.8 / 32.2 / 32.1*
Temperature range	7 °C / 13 °F above ambient up to 50° C /122 °F
CO ₂ range (Vol.-% CO ₂)	0 - 20
Humidity average value (% RH)	? 95
Recovery time after door was opened for 30 sec. at 37 °C (98.6 °F) (Min.)	5
Model no. (230 V 50/60 Hz)	
C 150 with right hinged door	9040 - 0040
C 150 with left hinged door	9040 - 0059
2 C 150, with stack of 2 C 150, right hinged door	9040 - 0062
2 C 150, with stack of 2 C 150, left hinged door	9040 - 0065

Options and accessories CB series:



► Intelligent Fail Safe™. Enhanced safety

A unique electronic safety system for the independent monitoring of the CO₂ adjustment in the incubator. When tolerance limits are exceeded, the Intelligent Fail Safe™ system automatically takes over control of the CO₂ concentration; this is particularly useful over weekends when technicians are not present to ensure the survival of cultures.



► Control for variable O₂ values

This adjustment is performed with an additional control circuit by controlled feeding of oxygen or nitrogen for hyperoxic or hypoxic culture conditions. Measurement is performed with a zirconium oxide sensor (ZrO₂).



► Integration of flexible cultivation systems

Plug-and-play solutions for the integration of flexible cultivation systems. Quick connection of external mixing or shaker devices by means of a controlled power outlet switch, or through our modular expandable roller system for cultivation of adherent cells and suspension cultures.



► Gas-tight, divided inner glass door

Maintains consistent climatic conditions within the incubator. Minimal loss of incubator atmosphere, heat and, CO₂ during loading, as well as fast recovery times.

CB 150: 4 doors, CB 210: 6 doors, for C 150 as retrofit set available.



► Silicone access ports

Silicon access ports are provided for inserting external measuring devices. They have a diameter of 30 mm and can be sealed with a silicone plug on both sides, for positioning either on the left or the right rear side.



► Ethernet interface

With this interface, CO₂ incubators can be easily and rapidly linked to the APT-COM™ DataControlSystem documentation software



► APT-COM™ DataControlSystem GLP Edition

Software for GLP-compliant control, programming, and documentation. Permits networking of up to 30 units or controllers. Complies with FDA 21 CFR Part 11 requirements

Options- and article numbers:



	C 150	CB 53	CB 150	CB 210
Ethernet interface	-	8012-0587	8012-0587	8012-0587
Base on castors	9051-0024	9051-0031	9051-0028	9051-0029
Stacking adapter for thermal decoupled	-	9051-0032	9051-0026	9051-0030
Stacking adapter for direct thermal decoupled stacking of a CB 150 / C 150 combination	9051-0027	-	9051-0027	-
Stacking adapter for direct thermal decoupled stacking of two C 150 models	9051-0025	-	-	-
Stacking frame vibration-free	-	-	9051-0020	9051-0023
Perforated shelf, stainless steel	6004-0080	6004-0105	6004-0080	6004-0082
Divided shelf, stainless steel for divided gas-tight inner glass door	-	-	8012-0578	8012-0607
CO ₂ gastank changer	-	-	8012-0297	8012-0297
CO ₂ gastank changer, for connecting two gastanks, with external connection for up to one additional CO ₂ incubator	-	-	8012-0307	8012-0307
O ₂ and N ₂ gastank changer	-	-	8012-0298	8012-0298
Gastank connection kit for CO ₂	8012-0014	8012-0014	8012-0014	8012-0014
Gastank connection kit for O ₂	-	8012-0015	8012-0015	8012-0015
Gastank connection kit for N ₂	-	8012-0016	8012-0016	8012-0016
Gas Supply Control Unit	8012-0408	8012-0408	8012-0408	8012-0408
Silicone access port, 30 mm left	-	-	8012-0559	8012-0559
Silicone access port, 30 mm right	-	-	8012-0560	8012-0560
Silicone access port, 30 mm back	-	8012-0558	8012-0558	8012-0558
Factory calibration certificate for temperature and CO ₂	8012-0228	8012-0228	8012-0228	8012-0228
Factory calibration certificate for the O ₂ control option	-	8012-0229	8012-0229	8012-0229
Temperature measurement acc. to DIN 12880 (27 measuring points) at 37 °C (98.6 °F)	8012-0156	8012-0156	8012-0156	8012-0156
Intelligent Fail Safe	-	8012-0232	8012-0232	8012-0232
Interior power socket	-	-	8012-0300	8012-0300
4-20 mA analog output for temperature and CO ₂ measurements	-	-	8012-0351	8012-0351
Cleaning kit	8012-0503	-	-	-
Locking of controller keyboard	-	8012-0301	8012-0301	8012-0301
CELLROLL	-	-	8012-0571	8012-0572
Manual for Primary Human Cell Culture	7001-0079	7001-0079	7001-0079	7001-0079



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BINDER Product Range:

► Scientific Products

- Drying ovens ED | FD
- Heating chambers FED
- Vacuum drying ovens VD | VDL
- Microbiological incubators BD | BF | KB
- CO2-incubators C | CB
- Constant climate chambers KBF | KBF ICH | KBF LQC
- Plant growth chambers KBW | KBWF

► Industrial Products

- Heating chambers FED
- Temperature test chambers FP | M
- Environmental test chambers MK
- Climatic test chambers MKF
- Low temperature test chambers MKT
- Constant climate chambers KMF
- Vacuum drying ovens VD | VDL
- Safety drying ovens FDL | MDL