BINDER
Best conditions for your success

# BINDER product overview

Accurate environmental simulation for reliable results

# On your doorstep – worldwide

## The ultimate in premium quality – produced in Germany

BINDER simulation chambers perform complex laboratory tasks with absolute reliability. They are developed and manufactured exclusively at the company site in Tuttlingen, southern Germany. We carry out all production stages in our factory – parts are punched, bent, and welded with precision; units are insulated and then finally assembled with care. By doing this, we can guarantee quality across the board.
**We supply around 22,000 premium units globally each year, with our intensive quality checks ensuring the excellent BINDER standard each time.**

With our four subsidiaries and our international sales partners, we are never far away from global companies, institutes, and research facilities all over the world. In recent years, we have really increased our international presence and are now highly committed to our customers in Asia and America, as well as to our core markets in Europe. Our BINDER experts support and advise you on-site in everything from choosing your perfect unit and installation, right through to maintenance and reliable technical support.

Right on your doorstep – in 135 countries around the world


# Perfection in every detail

## The BINDER product portfolio and know-how – for all industries

Nearly all respected companies and research facilities rely on BINDER simulation chambers with the characteristic red triangle, whether they need them for cell or tissue cultivation, long-term storage, product testing, or material testing. We know what is important in laboratory practice and therefore work to ensure that we can fulfill our customers' requirements perfectly with excellent products and sophisticated equipment features. Our highly diversified BINDER product portfolio includes incubators, growth chambers, ultra low temperature freezers, drying and heating chambers, and climate chambers. It therefore covers the diverse requirements of the industries and markets in a first-class manner.
Series production units and customer-specific solutions – for all circumstances

Right from their manufacture at the factory, BINDER temperature, climate, and simulation chambers address the widest range of demands from scientific and industrial labs. Thanks to an extensive range of accessories and equipment options, our series production products can be set up in a more specific way on request for all standard application areas. If they are to be used for truly specialist laboratory tasks, the series production simulation chambers can be adapted further using individual extras from BINDER Customized Solutions.

### BINDER industry expertise

- Automotive industry
- Biotechnology
- Chemistry
- Electronics/Semiconductors
- Human medicine
- Pharmaceuticals
- Test laboratories
- Cosmetics
- Air and space travel
- Food/beverage industry
- Medical research
- Defense

# Looking for the right climate chamber?
## BINDER products are exactly what you need!

Every BINDER climate chamber is equipped with top-of-the-range technology made in Germany and makes it possible to precisely simulate biological, chemical, and physical environmental conditions. The wide range of products from the leading specialist addresses the various requirements in science and industry. It comprises temperature and climate chamber models, material testing and drying chambers, as well as environmental simulation chambers. You'll find the ideal unit for every application!

| | | Interior volume: | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 23...28 liters | 53...65 liters | 115...130 liters | 170 liters | 220...350 liters | 400...500 liters | 700...720 liters | 1,020...1,060 liters | ≥1,600 liters | Page |
| GROWTH<br><br>CO2 INCUBATORS<br>STANDARD INCUBATORS<br>COOLING INCUBATORS<br>PLANT GROWTH CHAMBERS | CB series | - | • | - | • | • | - | - | - | - | 5 |
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| | B series | • | - | - | - | - | - | - | - | - | 9 |
| | BF series | - | • | • | - | • | • | • | - | - | 9 |
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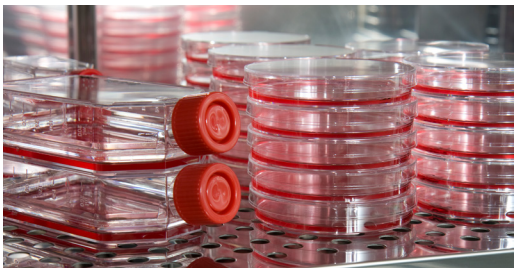
# Growth

Precise regulation of temperature, humidity, CO2 concentration, and O2 concentration as physical parameters, plus reliable reproducibility of test conditions, are the most important requirements for incubators and climate chambers used in scientific laboratories that work with living organisms. BINDER is aware of these requirements and works continuously to provide you with the perfect CO2 incubators, microbiological incubators, and plant growth chambers. They deliver innovative technical solutions and comprehensive equipment options as standard.

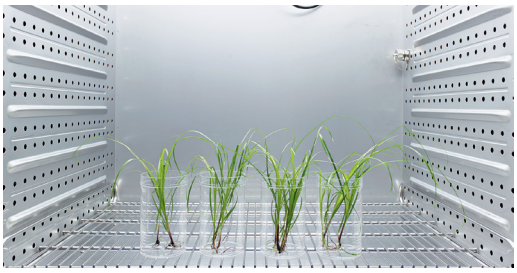


## Cell biology

**CB-S | CB | CBF CO2 incubators**

## Microbiology

**B | BD | BD-S | BF standard incubators**
**KB | KB PRO | KB ECO | KT cooling incubators**



## Plant biology

**KB PRO | KBF | KBF PRO plant growth chambers**

# $CO_2$ incubators with hot air sterilization and heat sterilizable $CO_2$ sensor | CB series

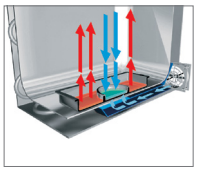
go2binder.com/en-CB

Features:

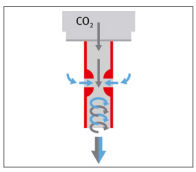
- Temperature range: from +4°C above ambient temperature up to +60°C
- Humidity range: 90 to 95% RH
- $CO_2$ control range: 0 to 20 vol.% $CO_2$
- Tried-and-tested anti-contamination concept with 180°C hot air sterilization
- Optimized double-pan humidification system with condensation protection
- $CO_2$ gas-mixing jet with Venturi effect
- Hot-air sterilizable $CO_2$ sensor with single-beam infrared technology

Available sizes: CB 56 | CB 170 | CB 260 model

Seamless, deep-drawn chamber with corrugated sides and no interfering fixtures

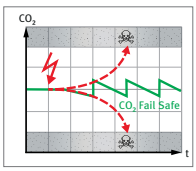


Permadry™ – humidification system with double pan




Sterilizable IR $CO_2$ sensor and Venturi gas-mixing nozzle

DuoDoor™: outer and inner door open at the same time




$CO_2$ fail-safe for emergency control in the event of sensor failure

# $CO_2$ incubators with hot air sterilization and humidity control | CBF series

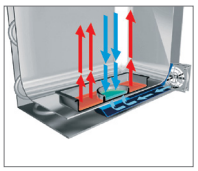
go2binder.com/en-CBF

Features:

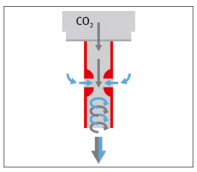
- Contamination-safe humidification system without water pan
- Tried-and-tested anti-contamination concept with 180°C hot air sterilization
- Hot-air sterilizable $CO_2$ sensor with single-beam infrared technology
- Seamless inner chamber made of stainless steel with flanges as shelf support system
- Fanless interior with Venturi $CO_2$ gas mixing nozzle
- Intuitive touchscreen controller
- Internal data logger, measured values can be read out in open format via USB

Available sizes: CBF 170 | CBF 260 model

Contamination-safe humidification system without water pan

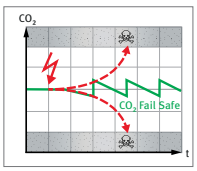


Permadry™ – humidification system with double pan




Sterilizable IR $CO_2$ sensor and Venturi gas-mixing nozzle

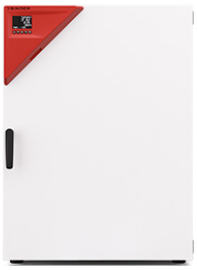
DuoDoor™: outer and inner door open at the same time




$CO_2$ fail-safe for emergency control in the event of sensor failure

# $CO_2$ incubators with hot air sterilization | CB-S series

go2binder.com/en-CB-S

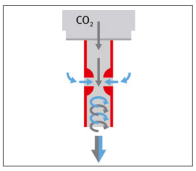


Features:

- Temperature range: +6°C above ambient temperature to +50°C
- Humidity range: 90 to 95% RH
- $CO_2$ control range: 0 to 20 vol.% $CO_2$
- Tried-and-tested anti-contamination concept with 180°C hot air sterilization
- Humidification system with condensation protection
- $CO_2$ gas-mixing jet with Venturi effect
- $CO_2$ sensor with single-beam infrared technology

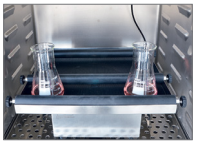
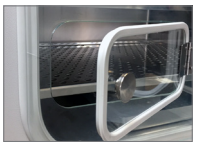
Available sizes: CB-S 170 | CB-S 260 model

Seamless, deep-drawn chamber with corrugated sides and no interfering fixtures

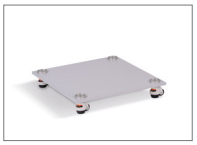



IR CO2 sensor and Venturi gas-mixing nozzle

# Accessories and configurations

| | | |
|---|---|---|
| **$CO_2$ shaker** | High-quality solution for the incubation of suspension cell cultures in $CO_2$ incubators. As only corrosion-resistant components are used in the stainless steel housing, the $CO_2$ shaker is ideal for gassed incubators with increased $CO_2$ concentrations and nearly saturated humidity. Available as a Universal variant with ribbon cable for all BINDER $CO_2$ incubators with an interior of 150 liters or more and a Professional variant for CB models from 150 liters upwards with a LEMO socket as an electric access port.<br>CB-S, CB series |  |
| **Quick sample access** | The additional glass window (13 cm × 25 cm) in the inner glass door allows quick access to samples with a short incubation time. This ensures that any disruption to the atmosphere is kept to a minimum and that recovery times are short.<br>CB series |  |
| **Multiple-split inner door** | Split glass doors and special matching racks make it possible to divide the interior for different experiments. The interior atmosphere remains stable.<br>CB series |  |
| **Copper interior fittings** | The kit consists of three copper shelves and a copper-plated water pan. The copper equipment reduces the time and effort required to clean the incubators while ensuring a high level of resistance to contamination.<br>CB series |  |

**<u>Stacking options</u>:**

| | | |
|---|---|---|
| **Base** | The base equipped with casters is used for the secure positioning and leveling of BINDER $CO_2$ incubators.<br>CB-S, CB series |  |
| **Stacking adapter** | For stacking two BINDER $CO_2$ incubators in a thermally isolated manner.<br>CB-S, CB series |  |
| **Stacking frame on casters** | Stable, vibration-free stacking frame on casters with locking brakes for the safe stacking of two $CO_2$ incubators.<br>CB-S, CB series |  |

# Standard incubators with natural convection | BD Avantgarde.Line series

go2binder.com/en-BD

Features:

- Temperature range: ambient temperature +5°C to +100°C
- Excellent temporal and spatial temperature accuracy thanks to APT.line™ preheating chamber technology
- Heat transfer through natural convection
- Up to 30% lower energy consumption compared to conventional units on the market
- Disinfection possible at +100°C
- Easy and intuitive to use thanks to modern control technology

Available sizes: BD 23 | BD 56 | BD 115 | BD 260 | BD 400 | BD 720 model


Unit controller with LCD display and numerous functions

Data recording via the USB port, which comes as standard

Inner door made of tempered safety glass

# Standard incubators with natural convection | BD-S Solid.Line series

go2binder.com/en-BD


Features:

- Temperature range: ambient temperature +5°C to 70°C
- High temperature accuracy
- Heat transfer through natural convection
- Unit controller with timer function

Available sizes: BD-S 56 | BD-S 115 model

Controller with 7-segment display

Manually adjustable exhaust air flap

# Standard incubators with mechanical adjustment | B Classic.Line series

go2binder.com/en-B28

Features:

- Temperature range: 30°C to 70°C
- Hydromechanical thermostat
- Inner door made of tempered safety glass
- 2 chrome-plated racks
- Stackable

Available sizes: B 28 model

Inner chamber made of stainless steel

Glass pane with door gasket

# Standard incubators with forced convection | BF Avantgarde.Line series

go2binder.com/en-BF

Features:

- Temperature range: from 7°C above ambient temperature to 100°C
- Excellent temporal and spatial temperature accuracy thanks to APT.line™ technology
- Heat transfer through forced convection
- Short temperature recovery times
- Unit controller with LCD
- Electromechanical control of the exhaust air flap

Available sizes: BF 56 | BF 115 | BF 260 | BF 400 | BF 720 model


Unit controller with LCD and numerous functions

Data recording via the USB port, which comes as standard

Inner door made of tempered safety glass

# Cooling incubators with compressor technology | KB series

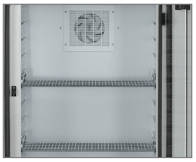
go2binder.com/en-KB

Features:

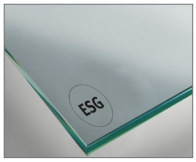
- Temperature range: -10°C to +100°C
- Powerful cooling with compressor cooling unit
- Accurate temperature control
- Disinfection possible at +100°C
- Up to 30% lower energy consumption compared to the previous model
- Adjustable fan speed

Available sizes: KB 65 | KB 130 | KB 260 | KB 470 | KB 720 | KB 1060


Unit controller with time-segment and real-time programming



Corrosion-resistant stainless-steel inner chamber




Inner door made of tempered safety glass

White light LED modules for flexible and simple placement (option)

# Cooling incubators with an extended temperature range | KB PRO series

go2binder.com/en-KB-PRO

Features:

- Temperature range: -20°C to +100°C
- APT.line™ preheating chamber technology
- Energy-efficient cooling with modern inverter cooling unit
- Sturdy housing design with HIT sandwich technology
- Adjustable fan speed
- Two racks made of stainless steel (models 260 and larger come with telescopic rails)
- Intuitive touchscreen unit controller with time-segment and real-time programming
- Stainless-steel inner chamber
- Inner doors made of metal oxide-coated safety glass

Available sizes: KB PRO 130 | KB PRO 260 | KB PRO 470 | KB PRO 720 | KB PRO 1060 | KB PRO 1600

ICH light module upgrades your cooling incubator to a photostability test chamber (option)

LED strip lights with 3 different light colors for plant growth tests (option)


Single triangle with illuminated status indicator (starting with model 470)

Intuitive touchscreen unit controller with ergonomic terminal (starting with model 470)

# Incubators with environmentally friendly thermoelectric cooling | KB ECO

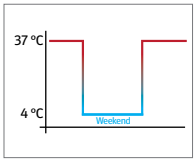
go2binder.com/en-KB-ECO

Features:

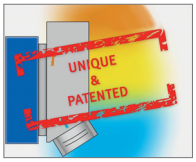
- Temperature range: 0°C to +70°C (max. 26°C below the ambient temperature)
- APT.line™ preheating chamber technology
- Electric temperature control thanks to a thermoelectric cooling module with innovative heat dissipation
- Inner door made of tempered safety glass
- Inner chamber made completely of stainless steel
- 2 rack, stainless steel
- Adjustable condensation protection

Available sizes: KB ECO 240 | KB ECO 400 | KB ECO 720 | KB ECO 1020

Unique condensation/drying out protection system for all operating conditions




Programmable temperatures for intermittent incubation and cooling




Failsafe operation thanks to intelligent thermoelectric temperature control

Minimum energy consumption thanks to optimized thermoelectric cooling

# Cooling incubators with thermoelectric cooling | KT series

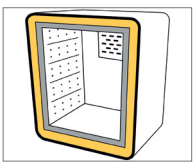
go2binder.com/en-KT

Features:

- Temperature range: +4°C to +100°C
- Precise, controlled cooling thanks to a thermoelectric cooling module
- Environmentally friendly and safe, since no refrigerants are used
- Energy-efficient temperature control at ambient temperature
- Disinfection possible at +100°C
- Adjustable fan speed

Available sizes: KT 53 | KT 115 | KT 170


Unit controller with time-segment and real-time programming



HIT insulation, direct foam insulation of the chamber with the housing

Interior door made of safety glass with a seal

White light LED modules for flexible and simple placement (option)

# Accessories and configurations

| | | |
|---|---|---|
| **ICH light module** | Illumination cassettes and supply module for upgrading a cooling incubator/growth chamber to a photostability test chamber. Can be retrofitted in two versions with or without light sensor for light-dose control (LQC). Complies with ICH guideline Q1B.<br>KB PRO series (260, 470, 720 modules) |  |
| **Plant light module** | LED strip lights with a supply module and a light control unit for the three light channels: warm white, cool white, and dark red. The strip lights can be positioned flexibly and attached to standard racks.<br>KB PRO series (260, 470, 720, 1060, 1600 modules) |  |
| **$CO_2$ gassing module** | Freestanding units can be retrofitted with a $CO_2$ gassing module. Control range 0–1% vol. $CO_2$ for plants or 0–20% vol. $CO_2$ for cell cultures.<br>KB PRO series (260, 470, 720, 1060, 1600 modules) |  |
| **LED strip lights** | LED strip lights in three different lengths (30, 50, 90 cm) can be easily and variably positioned in the chamber, including various attachment options and control unit. Additional strip lights can be added upon request.<br>KB, KB PRO series |  |

# Cold storage

An ultra low temperature freezer must ensure reliable cooling to maintain the integrity of heat-sensitive samples. In addition to this vital requirement in the laboratory, it is important to establish a practical, user-oriented safety and operating concept – for example, by ensuring recording and traceability of the temperature profile over the entire period of storage, or the ability to open the chamber easily.
BINDER has developed an ultra low temperature freezer that seamlessly joins the ranks of proven BINDER products in terms of reliability for the scientific laboratory and sets new standards in environmental friendliness.

## Sample storage

**UF V ultra low temperature freezers**

# Ultra low temperature freezers with environmentally friendly refrigerants | UF V series

go2binder.com/en-UFV

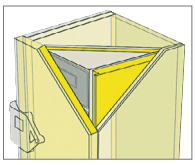
Features:

- Temperature control range: -90°C to -40°C
- Lowest energy consumption in its class
- Efficient thermal insulation with vacuum insulation panels
- Environmentally friendly refrigerants R-290 and R-170
- Minimum buildup of ice thanks to the innovative door concept
- Inner doors can be removed for deicing
- Rust-proof interior made completely of stainless steel
- Can be equipped with air or water cooling

Available sizes: UFV 350 | UFV 500 | UFV 700 model

Environmentally friendly refrigerant

R-290
R-170



Patented VIP insulation for ultimate energy efficiency

Inner chamber, shelves, and inner doors made entirely from stainless steel

Door latch handle for easy opening and closing


Water cooling for connecting to an existing cooling water system

# Accessories and configurations

| | | |
|---|---|---|
| Racks and boxes | Large selection of racks made of aluminum or stainless steel in different option models. Cryobox set consisting of 36 cardboard boxes with sample dividers.<br>UF V series |  |
| Door access system | Door access system consisting of electromechanical door lock and electronic access control via NumPad.<br>UF V series |  |
| Alarm system | Battery-backed alarm system for maintaining temperature display, alarm messages, and communication.<br>UF V series |  |

# Drying & tempering

The requirements for a drying chamber in the area of temperature stress testing reach far beyond temperature accuracy, heat distribution, and residue-free drying. A chamber used to dry flammable materials has to meet certain safety standards.
BINDER masters these requirements like no other and offers a wide range of drying and heating chambers, material test chambers, and chambers for safety drying or gentle vacuum drying of heat-sensitive samples.


## ▸ Drying and tempering

**Drying and heating chambers**
**ED | ED-S | E | FD | FED | FD-S | FP | M**

## ▸ Vacuum drying

**VD | VDL vacuum drying chambers**

# Drying and heating chambers with natural convection | ED Avantgarde.Line series

go2binder.com/en-ED

Features:

- Temperature range: ambient temperature +5°C to +300°C
- Excellent temporal and spatial temperature accuracy thanks to new APT.line™ technology
- Transfer of heat through natural convection
- Up to 30% lower energy consumption compared to conventional units on the market
- Easy and intuitive to use thanks to modern control technology, USB interface
- Class 2 integrated independent adjustable temperature safety device (DIN 12880) with visual alarm

Available sizes: ED 23 | ED 56 | ED 115 | ED 260 | ED 400 | ED 720


Unit controller with LCD and numerous functions

Data recording via the USB port, which comes as standard

# Drying and heating chambers with natural convection | ED-S Solid.Line series

go2binder.com/en-ED

Features:

- Temperature range: ambient temperature +7°C to +250°C
- High temperature accuracy thanks to APT.line™ preheating chamber technology
- Transfer of heat through natural convection
- Controller with timer function
- Class 2 integrated independent adjustable temperature safety device (DIN 12880) with visual alarm

Available sizes: ED-S 56 | ED-S 115

Unit controller with 7-segment display

Manually adjustable exhaust air flap

# Drying and heating chambers with mechanical adjustment | E Classic.Line series

go2binder.com/en-E

Features:

- Temperature range: +60°C to +230°C
- Adjustable exhaust air flap
- Hydro-mechanical thermostat
- Class 2 independent adjustable temperature safety device
- Built-in timer 0–120 min

Available sizes: E 28 model

Inner chamber made of stainless steel

# Drying and heating chambers with forced convection | FD/FED Avantgarde.Line series

go2binder.com/en-FD

Features:

- Temperature range: ambient temperature +10°C to +300°C
- Excellent temporal and spatial temperature accuracy thanks to APT.line™ technology
- Heat transfer through forced convection
- Up to 30% lower energy consumption compared to conventional units on the market
- Easy and intuitive modern unit controller technology
- Ethernet interface
- Class 2 integrated independent adjustable temperature safety device (DIN 12880) with visual alarm

Available sizes: FD 23 | FD/FED 56 | FD/FED 115 | FD/FED 260 | FED 400 | FD/FED 720


Unit controller with LCD display and numerous functions

Data recording via the USB port, which comes as standard

# Drying and heating chambers with forced convection | FD-S Solid.Line series

go2binder.com/en-FD

Features:

- Temperature range: ambient temperature +10°C to +250°C
- Homogeneous temperature distribution thanks to APT.line™ preheating chamber technology
- Heat transfer through forced convection
- Unit controller with timer function
- Class 2 integrated independent adjustable temperature safety device (DIN 12880) with visual alarm

Available sizes: FD-S 56 | FD-S 115

Unit controller with 7-segment display

Manually adjustable exhaust air flap

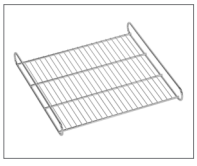
# Drying and heating chambers with forced convection and program functions | M series

go2binder.com/en-M

Features:

- Temperature range: +22°C above ambient temperature up to +300°C
- Reinforced fan with adjustable speed
- Electromechanical control of the exhaust air flap
- Touchscreen unit controller
- Computer interface: Ethernet
- Class 2 independent adjustable temperature safety device (DIN 12880) and class 3.1 independent temperature safety device (DIN 12880) with visual/acoustic alarm

Available sizes: M 56 | M 115 | M 260 | M 720



2 chrome-plated racks included in the scope of delivery for the standard unit

Intuitive touchscreen unit controller

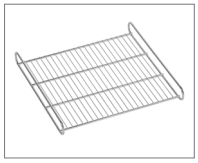
# Drying and heating chambers with forced convection and program functions | FP series

go2binder.com/en-FP

Features:

- Temperature range: ambient temperature +10°C to +300°C
- Excellent temporal and spatial temperature accuracy thanks to APT.line™ technology
- Heat transfer through forced convection
- Up to 30% lower energy consumption compared to conventional units on the market
- Easy and intuitive modern unit controller technology
- Ethernet interface
- Class 2 integrated independent adjustable temperature safety device (DIN 12880) with visual alarm

Available sizes: FP 56 | FP 115 | FP 260 | FP 720



2 chrome-plated racks included in the scope of delivery for the standard unit


Unit controller with LCD and numerous functions

Data recording via the USB port, which comes as standard

# Vacuum drying chambers for non-flammable solvents | VD series

go2binder.com/en-VD

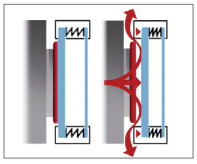
Features:

- Temperature range: ambient temperature +9°C to +220°C
- Unit controller with digital display of pressure and temperature
- Program-controlled drying monitoring with automatic ventilation at end of process
- Internal data logger, measured values can be read out in open format via USB
- 1 aluminum expansion rack, can be freely positioned
- Universal ventilation, can be used for inert gas or ambient air
- DN 16 universal access port

Available sizes: VD 23 | VD 56 | VD 115

Optimized thermal transfer through expansion racks

Optional equipment: Pump chamber with pump



Shatterproof, spring-mounted safety glass panel

Optional LED light strip

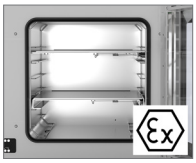
# Vacuum drying chambers for flammable solvents | VDL series

go2binder.com/en-VDL

Features:

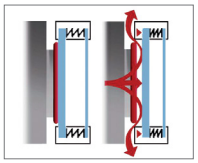
- Temperature range: ambient temperature +9°C to +110°C
- Unique worldwide: ATEX conformity for units: EX II 2/3/- G IIB T3 Gb/Gc/- X
- Intuitive touchscreen unit controller with graphical pressure and temperature display
- Program-controlled drying monitoring with automatic ventilation at end of process
- Internal data logger, measured values can be read out in open format via USB

Available sizes: VDL 23 | VDL 56 | VDL 115

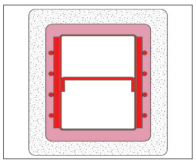


Explosion-protected interior

Optional equipment: Pump chamber with pump

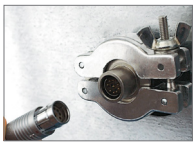


Shatterproof, spring-mounted safety glass panel



Jacket heating with optimized thermal transfer to expansion racks

# Accessories and configurations

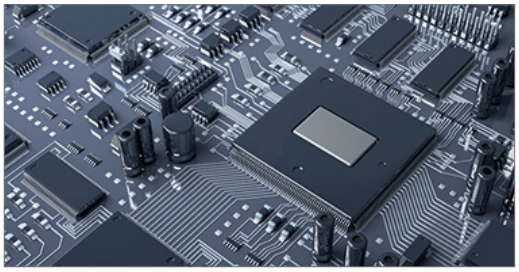
| | | |
|---|---|---|
| **Vacuum pumps** | BINDER vacuum drying chambers are available with a perfectly matched vacuum pump in a separate pump chamber. The pumps are available in various option models. Particularly useful features of these pumps include excellent pumping speed and a long service life. | |
| **Chemical membrane pump VPA 1** | Chemical membrane pump with a nominal air flow of 2.0 $m^3$/hour, final pressure 7 mbar.<br>VD series |  |
| **Chemical membrane pump VPA 2** | Chemical membrane pump with a nominal air flow of 4.0 $m^3$/hour, final pressure 1.8 mbar.<br>VD series |  |
| **Chemical membrane pump EX-proof VP5 EX** | ATEX-compliant chemical membrane pump with a nominal air flow of 1.9 $m^3$/hour, final pressure 12 mbar.<br>VDL series |  |
| **Pump chamber with vacuum pump** | The pump chamber raises your vacuum oven to the ideal working height, significantly reduces the noise generated by the vacuum pump, and protects both the pump and the glass material from mechanical damage. The pump can be switched on and off by means of the vacuum oven control system using a switchable power socket.<br>VD series |  |
| **Temperature measurement on the sample** | PT 100 sensor with a flexible cable for taking measurements directly on the sample.<br>VD and VDL series |  |
| **Electric access port** | Vacuum-tight access port for transmitting electrical currents, voltages, or signals.<br>VD and VDL series |  |
| **DN 40 universal access port** | Additional access port. A DN 16 universal access port is already included in the standard equipment.<br>VD and VDL series | |

# Environmental simulation

Product development and quality assurance are primarily focused on complying with and monitoring performance specifications. Endurance tests and functional tests of materials, products, and systems are essential elements in this. A climate chamber is expected to simulate the effects of temperature, humidity, and light on the test specimen.
With these specific requirements in mind, BINDER offers a range of constant climate chambers that are ideal for performing precise tests with long-term stability. In cases where dynamic climate changes are required, our dynamic climate chambers offer innovative technical solutions and extensive equipment options. They are perfectly aligned with standards or individual requirements, and ensure that either active or passive test specimens can be tested reliably.

## ▸ Stability tests

**Constant climate chambers | KBF | KBF-S ECO | KBF PRO**
**Walk-in-chambers | WIC**



## ▸ Material tests

**MK-$CO_2$ | MKT | MKF-$CO_2$ | MKFT dynamic climate chambers**

# Constant climate chambers with large temperature / humidity range | KBF series

go2binder.com/en-KBF

**Features:**

- Temperature range: 0°C to +70°C
- Humidity range: 10% to 80% RH
- Energy-efficient cooling with modern inverter cooling unit
- Test conditions that are stable in the long term for tests in line with the ICH Q1A guideline
- Responsive long-life steam humidifying system
- Flexible water management at every location
- High-quality stainless steel inner chamber

Available sizes: KBF 130 | KBF 260 | KBF 470 | KBF 720 | KBF 1060 | KBF 1600 model

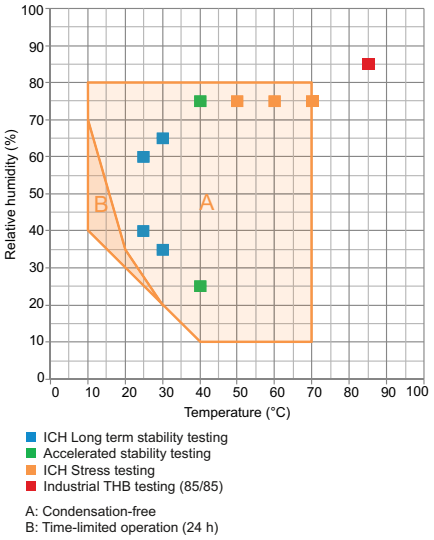
Homogeneous climate conditions thanks to APT.line™ preheating chamber technology

Intuitive touchscreen unit controller with ergonomic terminal (starting with model 470)

Direct connection to ultrapure water pressure line

Inner chamber and all fixtures are made from stainless steel

Temperature-humidity chart




A: Condensation-free
B: Time-limited operation (24 h)

# Constant climate chamber with thermoelectric cooling | KBF-S ECO series

go2binder.com/en-KBF-S-ECO

**Features:**

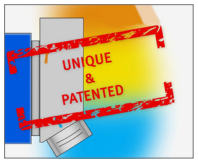
- Temperature range: 0°C to +70°C (max. 28°C below the ambient temperature)
- Humidity range: 10% to 80% RH
- APT.line™ preheating chamber technology
- Independent water supply via tank
- LCD display for temperature and humidity along with additional information and alarms
- Internal data logger, measured values can be read out in open format via USB

Available sizes: KBF-S ECO 240 | KBF-S ECO 400 | KBF-S ECO 720 | KBF-S ECO 1020 model

Homogeneous climate conditions thanks to APT.line™ preheating chamber technology

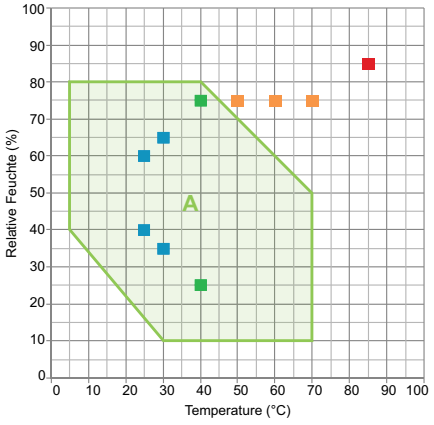
Precise humidification

Inner chamber and all fixtures are made from stainless steel




Stable climate conditions even at temperatures down to 28°C below the ambient temperature

Temperature-humidity chart




A: Garantiert kondensationsfreier Bereich

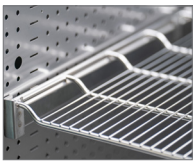
# Constant climate chambers with extended temperature / humidity range | KBF PRO series

go2binder.com/en-KBF-PRO

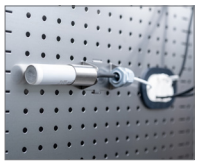
**Features:**

- Temperature range: -20°C to +100°C
- Humidity range: 10% to 98% RH
- APT.line™ preheating chamber technology
- Energy-efficient cooling with modern inverter cooling unit
- Cooling with climate-neutral R-290 refrigerant
- Adjustable fan speed
- Humidity regulation with capacitive humidity sensor and responsive steam humidification
- Maximum flexibility with options for plant light and ICH light systems

Available sizes: KBF PRO 130 | KBF PRO 260 | KBF PRO 470 | KBF PRO 720 | KBF PRO 1060 | KBF PRO 1600 model



Exceptionally easy loading with stainless steel telescopic rails (starting with model 260)

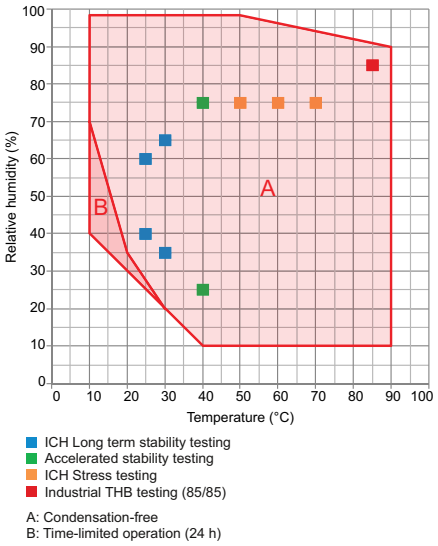


Generous cable feed-through for easy insertion of additional connections

Signal triangle with illuminated status indicator (starting with model 470)

Intuitive touchscreen unit controller with ergonomic terminal (starting with model 470)

Temperature-humidity chart



# Accessories and configurations

| | | |
|---|---|---|
| **ICH light module** | Illumination cassettes and supply module for upgrading a cooling incubator to a photostability test chamber. Can be retrofitted in two versions with or without light sensors for light-dose control (LQC). Complies with ICH guideline Q1B.<br>KBF, KBF PRO series (260, 470, 720 models) |  |
| **Plant light module** | LED strip lights with a supply module and a light control unit for the three light channels: warm white, cool white, and dark red. The strip lights can be positioned flexibly and attached to standard racks.<br>KBF, KBF PRO series (260, 470, 720, 1060, 1600 models) |  |
| **$CO_2$ gassing module** | The freestanding units in the KBF PRO series can be retrofitted with a $CO_2$ gassing module. Control ranges: 0–1% vol. $CO_2$ for plants or 0–20% vol. $CO_2$ for cell cultures.<br>KBF, KBF PRO* series (260*, 470, 720, 1060, 1600 models) |  |
| **PURE AQUA water treatment system** | BINDER PURE AQUA Service for treating or demineralizing tap water for the humidification systems in BINDER climate chambers. The complete set consists of a PURE AQUA 300 single-use cartridge, a measuring device, and all necessary connecting parts.<br>KBF, KBF PRO series |  |
| **LED strip lights** | LED strip lights in three different lengths (30, 50, 90 cm) can be easily and variably positioned in the chamber, including various attachment options and control unit. Additional strip lights can be added upon request.<br>KBF, KBF PRO series |  |

# Walk-in-chambers | WIC series

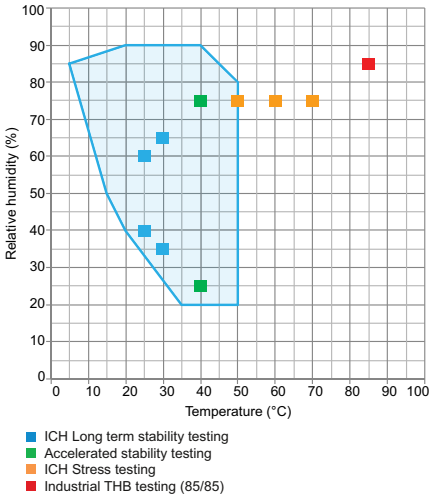
go2binder.com/en-WIC

**Features:**

- Temperature range: 5°C to 50°C
- Stable and even climate
- Reliable operation with a high level of reliability
- Redundant climate systems for maximum process reliability
- Flexible adaptation to space requirements and testing requirements
- ICH-compliant test conditions
- Durable, corrosion-resistant design
- Footprint: up to max. 22 m²
- Three standard sizes available
- Horizontally expandable in 10-cm increments and vertically in 5-cm increments

Available sizes: Standard sizes in 6 m², 9 m², or 12 m², other sizes available

**Temperature-humidity chart**

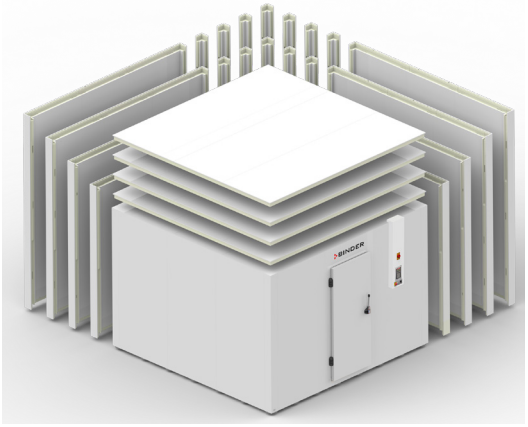


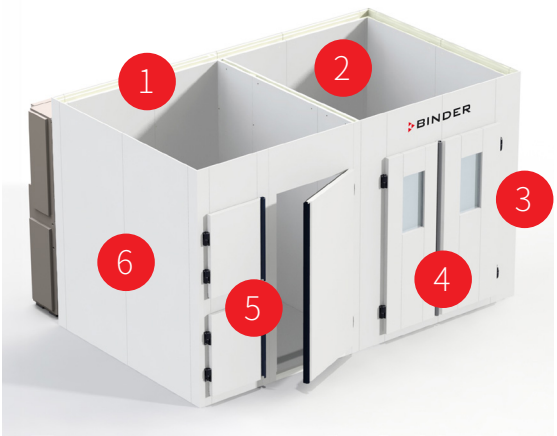

Illumination with motion detector

Inner walls and ceiling made of stainless steel with heavy-duty shelving

Air conditioning unit positioned at the rear of the chamber; front placement is also possible

## Configure your WIC to suit your **test setup, processes, and space**






### Customization options

1. **Partition walls**
   with tongue and groove connection
2. **Interior fittings**
   Shelves, lighting, ramps, access ports
3. **Viewing window**
   for walls and doors
4. **Door variants**
   single-leaf or double-leaf, with various hinges and handle options
5. **Access hatches**
   on the side or in the ceiling
6. **Conditioner**
   can be positioned on the back or front

# Dynamic climate chambers with humidity regulation | MKF/MKFT series

go2binder.com/en-MK

**Features:**

- Temperature range: -40°C to +180°C (MKF)
- Temperature range: -70°C to +180°C (MKFT)
- Humidity range: 10% to 98% RH
- Humidity regulation with capacitive humidity sensor and steam humidification
- Viewing window with interior lighting
- Intuitive touchscreen unit controller with time-segment and real-time programming
- Cooling with climate-neutral R-744 refrigerant (MKF-$CO_2$ 720)
- Alternating speed of 5 K/min

Available sizes: MKF 56 | MKF/T 115 | MKF/T 240 | MKF 400 | MKF-CO2/T 720

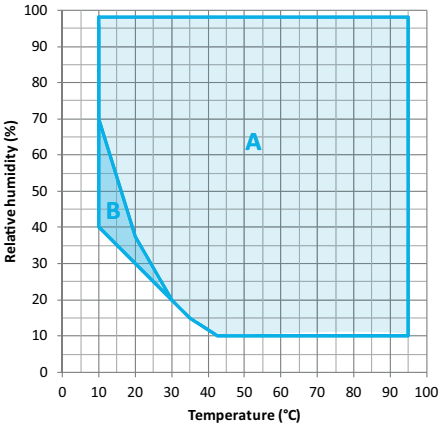
Homogeneous climate conditions thanks to APT.line™ preheating chamber technology

Large heated viewing window with LED interior lighting

TFT color display with resistive touchscreen, internal data logger that can be read via USB

Integrated 20-liter water-storage tank ensures a flexible water supply

Temperature-humidity chart




A: Standard Climate range
B: Time-limited operation (max. 24 hours)

# Dynamic climate chambers for rapid temperature changes | MK-$CO_2$/MKT series

go2binder.com/en-MK

Features:

- Temperature range: -48°C to +180°C (MK-$CO_2$)
- Temperature range: -70°C to +180°C (MKT)
- Programmable condensation protection for the test object
- Viewing window with interior lighting
- Intuitive touchscreen unit controller as operating terminal with time-segment and real-time programming
- Portable and freely movable thanks to unit casters
- Cooling with climate-neutral R-744 refrigerant (MK-$CO_2$)
- Alternating speed of 5 K/min
- Class 2 independent adjustable temperature safety device (DIN 12880) and class 3.1 independent temperature safety device (DIN 12880) with visual/acoustic alarm

Available sizes: MK 56 | MK/MKT 115 | MK-MK-$CO_2$/MKT 240 | MK-$CO_2$/MKT 400 | MK-$CO_2$/MKT 720 | MK MK-$CO_2$/MKT 1020

Homogeneous temperature conditions thanks to APT.line™ preheating chamber technology

Large heated viewing window with LED interior lighting

Ergonomically adjustable operating terminal with intuitive touchscreen controller

MK-$CO_2$: Temperature reduction to –50°C adjustable for up to 8 hours

# Battery test chambers

Battery test chambers from BINDER are suitable for tests performed on lithium-ion cells and modules. Handling lithium-ion batteries can present a variety of potential hazards. System operators need to evaluate the level of risk and counteract it using an appropriate safety concept. With BINDER by your side, you're perfectly equipped to overcome these challenges.

## Battery test

**Safety packages for aging, performance, and stress tests**
**Package A | Package P | Package P Plus | Package G | Package S**

# Battery test chambers with safety equipment are suitable for testing lithium-ion cells, modules, and systems

go2binder.com/en-battery-test-chambers


The safe classification and handling of energy storage devices is a critical factor in conducting reliable battery tests. The basis for this is the **EUCAR Hazard Level** – a scale developed by the European Council for Automotive R&D for the systematic assessment of potential battery hazards. Of course, our test environments comply with relevant industry standards such as DIN EN IEC and ISO.

Based on these hazard levels, BINDER has developed modular safety packages designed for EUCAR Levels 0 through 6 that integrate seamlessly into BINDER temperature and climate chambers. Different models and sizes can be mixed and matched.

## Integrated solutions

BINDER battery test chambers are compatible with third-party cyclers or chillers from all manufacturers. What's more, we implement customized, project-specific solutions to ensure maximum safety and reliability for every test.

# Accessories and configurations

| | | |
|---|---|---|
| **BINDER safety packages for battery test chambers** | Battery test chambers from BINDER are ideal for aging, performance, and stress testing in quality assurance and battery production. Battery test chambers from BINDER are suitable for tests performed on lithium-ion cells and modules. | |
| **Package A for aging tests** | These involve testing at a certain temperature without the battery load cycle. They are performed within a safe temperature range for the battery. |  |
| **Package P for performance tests** | Various battery-specific parameters, such as the load state, are tested with overlapping temperature ranges. These tests are performed within a safe temperature range for the battery. The equipment in the package is suitable for Hazard Levels up to 4. |  |
| **Package P Plus for extended performance tests** | The Package P Plus is designed specifically for extended performance tests conducted on lithium-ion batteries. It is ideally suited for use up to EUCAR Hazard Level 5 and is appropriate for demanding test requirements in research, development, and quality assurance. |  |
| **Package G for extended performance tests** | Package G is designed for extended performance testing of lithium-ion batteries at EUCAR Hazard Level 5 and, compared to Package P Plus, offers enhanced sensor technology for even greater safety and monitoring. It is intended for users who have the highest requirements for the detection and monitoring of critical parameters during demanding battery tests. |  |
| **Package S for stress tests** | The battery test Package S is specifically designed for demanding stress tests on lithium-ion batteries and offers maximum safety for tests involving increased risk. It is perfectly adapted to EUCAR Hazard Level 6. It thus enables safe and reliable testing even under critical test conditions and supports research, development, and quality assurance at the highest safety level. |  |

# Advantages at a glance

EUCAR O-6

## SAFE

**EUCAR-compliant safety packages**

Depending on the hazard level, the BINDER safety packages provide protection with regard to gas detection, inertization, and fire suppression.
They therefore offer a safe, standard-compliant test environment for battery applications.

## SMART

**Central connection thanks to interfaces**

BINDER battery test chambers can be integrated seamlessly into a test architecture. They communicate reliably with peripheral units via Ethernet (Modbus TCP) or optionally RS485 (Modbus RTU).

## RELIABLE

**Proven safety functions for critical applications**

BINDER fire suppression systems work independently and reliably. Combined with temperature monitoring, door locks, and pressure relief, a comprehensive protection concept is on offer.

## ECONOMICAL

**The ideal balance between safety, performance, and price**

The combination of a standard unit and modular accessory modules allows a customized system to be configured that offers outstanding value for money. BINDER offers the right equipment for both individual units and series solutions.

Battery test chamber with Package G

# Multi Management Software

BINDER's Multi Management Software provides management, recording, programming, control, and documentation options, and much more. With features ranging from GLP-compliant recording to convenient program creation and management of up to 100 units, the APT-COM™ 4 can be used in many industries and makes complex work processes much easier.


## ▸ APT-COM™ 4

**Multi Management Software**
**Basic | Professional | GLP**

# Multi Management Software for recording, controlling, and monitoring | APT-COM™ 4

go2binder.com/en-apt-com

**Features:**

- Easy, intuitive operation
- Overview of units at a glance thanks to the room plan function
- Choice of 5 menu languages: DE, EN, FR, IT, ES
- Easy and quick programming options with graphical user interface

Available editions: Basic | Professional | GLP

Unit overview and control at a glance

Room layouts can be created easily using drag & drop

Simple programming and presentation of measured data

Tamper-proof and GLP-compliant data retention

BASIC EDITION

For simple recording and documentation with up to 5 networked units.

PROFESSIONAL EDITION

Convenient unit and user management which builds on the Basic edition. Suitable for networking up to 100 units.

GLP EDITION

For working under GLP-compliant conditions. Measurement data is recorded in a tamper-proof manner and must meet the requirements set out by FDA Regulation 21 CFR Part 11.

# Accessories

**Alarm kit**

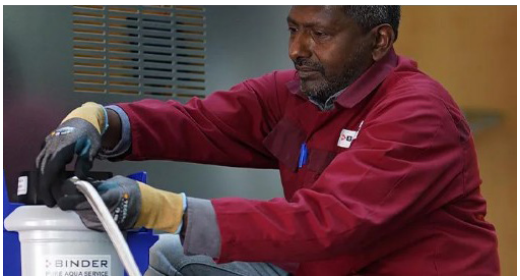
The Alarm Center software enables ongoing recordings to be monitored independently of APT-COM™ 4, e.g., on a second PC. The Alarm Center software monitors when unit parameter tolerances are exceeded, as well as the communication between APT-COM™ 4 and the connected units. The alarm kit hardware is designed to forward alarm messages triggered by the Alarm Center software to the customer's alarm systems.

APT-COM™ 4

# Options and accessories

We offer our customers a comprehensive selection of options and accessories for BINDER temperature, climate, and environmental simulation chambers.

You will find all options and accessories compatible with our products, as well as examples of possible configurations, on our website.



## BINDER accessories

**The perfect complement for your BINDER chamber**

BINDER
options & accessories
**go2binder.com/en-options**

# The ideal complement for the BINDER chamber

Access ports, various positions and sizes

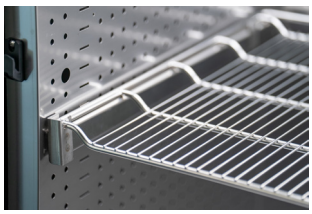
Light modules for plant growth or ICH photostability test

Qualification documents for validation

PURE AQUA Service water purification system

Interfaces

Various shelves



# Services

BINDER chambers boast impressively high levels of reliability and availability from day one. With regular maintenance, they will remain in service for many years. Every laboratory has its own operational requirements. Our services are flexible, customized, and specifically designed to ensure consistent accuracy, reliability, and compliance of the equipment.

- Expert technical support exactly when you need it

- Ensuring accuracy and reliability for BINDER chambers

- BINDER services all over the world

# Services

## Reliable and certified BINDER service & support

BINDER equipment provides reliable conditions for daily work in the laboratory. Its precise technology, “Made in Germany,” supports stable processes and reproducible results. This is complemented by services tailored to your specific needs.

Our service offers are on hand no matter where you are in the world. You can choose between a service contract with clearly defined services and predictable costs, or individual orders for specific services. This ensures you receive exactly the level of service that suits your unit, your application, and your internal processes.

### Maintenance and contracts


- Customized maintenance intervals.
- Invoicing for services and spare parts at the current list price
- Full access to the entire range of professional maintenance services

### Installation and commissioning

- Unit setup
- Connecting the unit to the power supply and other lines (water, drain, gas)
- Electrical inspection (VDE standard)
- Functional test upon installation of the unit

### Calibration with certificate

- Technical inspection
- Readjusting the unit settings (such as temperature, relative humidity, $CO_2$, $O_2$, pressure, etc.)
- Calibration with the desired number of data points, temperature mapping
- Issuing a calibration certificate in accordance with national guidelines

### Qualification & validation

- Fully compliant GLP/GMP documentation to minimize your workload
- Reliable and reproducible test results

### Leak testing

- Leak testing in accordance with Regulation (EU) No. 517/2014
- Checking all critical connections for leaks
- Complete documentation of the test results

### Spare parts service & kits

- Optimized repairs: All necessary parts and an information brochure in one package
- Improved quality: Pre-assembled kits reduce the risk of missing or incorrect parts
- Stock availability: Delivery times are reduced

### Repairs

- Global network of technicians and repair shops
- Short downtimes / quick reactions
- No production stoppages
- Efficient repair processing

BINDER
service solutions
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# Customer-specific solutions

Complex testing processes require solutions that are technically suitable and function reliably in everyday use. With BINDER Customized Solutions, we develop systems tailored to your application, your interfaces, and your process requirements. To this end, we combine our expertise in environmental simulation with engineering, automation, and system integration.

At BINDER Automation & Integrated Solutions, this results in solutions that integrate seamlessly into research, development, and production environments. The spectrum ranges from customized components to fully automated systems.

The goal is to deliver clear benefits for your operations: Stable test conditions, fewer manual interventions, reproducible results, and a solution tailored to your process.

- BINDER Customized Solutions

- BINDER Automation & Integrated Solutions

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# BINDER Customized Solutions

## Customized solutions tailored to your application, interfaces, and processes

If a series unit does not fully meet your requirements, BINDER will develop a suitable solution based on tried-and-tested simulation chambers. This could be a technical upgrade, a customized single unit, a small series production, or an integrated system for automated processes.
Our experts from the development, engineering, and applications teams will provide you with personalized advice and support your project from the requirements definition phase through to implementation. This results in solutions that integrate seamlessly into research, development, and production environments and operate reliably there.

Standard climate chamber

Climate chamber with safety equipment for battery testing

### + Access ports and connections

Special access ports with silicone plugs, hand access ports with removable gloves, sealable openings in glass doors, or large access ports for pipes.

### + Light and sensors

Illumination cassettes with black light and daylight, red light with a defined wavelength, illumination cassettes with sensors per level, or LED strip lights.

### + Reinforcements

Reinforced shelves, reinforced shelf racks, or inner chambers for heavy samples and components.

### + Controls and integrated components

Integration of additional components, special connections, or $O_2$ regulation.

### + Automated system solutions

For automated processes, such as core components in systems for microbiological quality control or for industrial testing processes

## Your benefits

- Time-saving: customized solutions are based on BINDER series units that are kept in stock
- Economical: consulting, costing, and solution proposals are free of charge
- Execution from batch size 1: production as a single product or in small series production
- Full warranty: for the unit including all enhancements
- Direct contact: support from experts throughout the entire development process
- Service & support: even after project completion

# BINDER products

- $CO_2$ incubators
- Standard incubators
- Cooling incubators
- Growth chambers
- Ultralow temperature freezers
- Drying and heating chambers
- Safety drying chambers
- Vacuum drying chambers
- Constant climate chambers
- Dynamic climate chambers
- Battery test chambers
- Walk-in-chambers
- Multi Management Software

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