Drying and Heating chambers
ED | FD | FED
Sophisticated technology for thermal applications.

Efficient drying, long-term storage at elevated temperatures, and sterilization applications with homogenous temperature distribution are among the many tasks consistently and reliably performed by BINDER drying ovens and heating chambers. The wide temperature range of 5 °C to 300 °C [41 - 572 °F] ensures rapid heating-up times and a large reserve capacity. Outstanding thermal insulation also lowers operating costs. These chambers are available with either natural convection (ED series) or forced convection (FD, FED series), and meet the high quality standards and process safety that are trademarks of BINDER chambers.

ED series
Drying ovens with natural convection for routine drying and sterilization applications
Model size: 23, 53, 115, 240, 720 liter

FD series
Drying ovens with forced convection for rapid drying and sterilization applications
Model size: 23, 53, 115, 240 liter

FED series
Heating chambers with forced convection for rapid drying and sterilization applications expanded time functions in the controller.
Model size: 53, 115, 240, 400, 720 liter
High process safety
APT.line™ preheating chamber technology guarantees homogenous temperature distribution throughout the interior. Smaller sample quantities are normally dried with natural convection to ensure an optimum air exchange rate and reliable drying results. Forced convection provides maximum efficiency at a high air exchange rate, which is particularly beneficial for large sample quantities and a high humidity content.

Advantages:
- Faster heating-up and recovery times than with natural air convection
- Completely homogenous temperature performance, even with fully loaded chambers
- Significant time-saving through high drying efficiency

Modest operating costs
Details such as significantly reduced energy use, intelligent heating technology, and extensive safety features contribute to state-of-the-art BINDER performance.

60 mm thermal insulation provides a stable temperature in the interior while keeping the outside of the housing cool. The two-point door closure seals the door securely even when working at the maximum temperature range.

Reliability
Only BINDER offers this wide temperature range of 5 °C to 300 °C as a standard feature. Unmistakable superior performance for universal use with either natural or forced convection. Binder offers the invaluable advantage of extremely rapid heating-up rates and recovery times.

Advanced control electronics
User-friendly microprocessor control, ergonomically positioned within the user’s field of view. ED and FD series are equipped with our digital standard controller (DS controller). The FED series have a digital multifunction controller (MS controller) with expanded time functions as standard equipment.
**ED Series**

**Drying oven with natural convection**

Routine drying and sterilization applications up to 300 °C (572 °F) and storage at precisely controlled elevated temperatures are the strengths of ED drying ovens. Because of the natural convection with a high rate of air exchange, thermal processes run with significantly increased efficiency.

**Equipment:**
- Electronically controlled APT.line™ preheating chamber
- Temperature range 5 °C (32 °F) above ambient temperature up to 300 °C (572 °F)
- Digital temperature setting with an accuracy of one degree
- DS controller with integrated timer 0 to 99 h
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- Adjustable front ventilation flap slide and rear exhaust ø 50 mm (1.97 inch)
- With or without RS 422 Interface for use with optional GMP/GLP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControl-System software
- Units up to 115 liters are stackable
- 2 chrome-plated racks included
- BINDER test certificate

**Technical data:**

<table>
<thead>
<tr>
<th>Model</th>
<th>Catalog no.</th>
<th>Equipment</th>
<th>Volume (l)</th>
<th>Exterior dimensions W x H x D (mm)</th>
<th>Interior dimensions W x H x D (mm)</th>
<th>Heating up time at 150°C (min)</th>
<th>Uniformity at 150°C (± °C)</th>
<th>Voltage (50/60 Hz)</th>
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</thead>
<tbody>
<tr>
<td>ED 23</td>
<td>9010-0190</td>
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<td>with RS 422</td>
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<td>433 x 492 x 516</td>
<td>222 x 330 x 277</td>
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</table>

Latest technical data at www.binder-world.com
FD Series
Drying ovens with forced convection

FD series units are primarily used in applications needing rapid drying and sterilization. Totally homogenous temperature distribution, rapid dynamic response, and a special air turbine which was developed by us and has 20% higher output, have made the FD series a genuine time-saving device.

Equipment:
- Electronically controlled APT.line™ preheating chamber
- Temperature range 5 °C (32 °F) above ambient temperature up to 300 °C (572 °F)
- DS controller with integrated timer 0 to 99 h
- Digital temperature setting with an accuracy of one degree
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- Adjustable front ventilation flap slide and rear exhaust ø 50 mm (1.97 inch)
- Units up to 115 liters are stackable
- 2 chrome-plated racks included
- Binder test certificate

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</table>

Latest technical data at www.binder-world.com
FED Series
Heating chamber with forced convection

The FED series is a true all-rounder. It has a virtually unlimited capacity and is at the same time particularly adaptable to the specific requirements of a large variety of testing applications. The enhanced time functions and the digitally controlled air turbine can be used to adjust ideal temperature parameters and recirculation air conditions.

Equipment:

- Electronically controlled APT.line™ preheating chamber
- Temperature range 5 °C (32 °F) above ambient temperature up to 300 °C (572 °F)
- MS controller with serveral timer functions
- Controller timer functions: delayed ON, delayed OFF, temperature dependent delayed OFF
- Digital temperature setting with an accuracy of one degree
- Adjustable fan speed
- Front ventilation flap slide and rear exhaust duct Ø 50 mm (1.97 inch)
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- RS 422 interface for communication software APT-COM™ DataControlSystem, or switch over to printer output with RS 232 / RS 422 interface converter
- Units up to 115 liters are stackable
- 2 chrome-plated racks included
- BINDER test certificate

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ED / FD / FED Series
Options / Accessories

- **Access ports**
  With silicon plugs for inserting external measuring devices into the chamber. Access ports with 10, 30, 50 and 100 mm (0.4, 1.2, 2, 3.9 inch) diameter.

- **Reinforced shelf**
  To ensure safe and stable storage of heavy test specimens.

- **Door with window and interior lighting**
  For optimum process control in the interior, available for all equipment sizes.

- **Calibration and Validation Service**
  BINDER reduces your equipment qualification and validation costs as part of your equipment order.

- **Analog output**
  Analog temperature output, 4 - 20 mA, with 6 - pin DIN socket (output not adjustable).
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