

## Heating oven with mechanical convection

A BINDER FD series heating oven is always used when fast drying and sterilization is required. Thanks to its fully homogeneous temperature distribution, quick dynamics and powerful fan, this heating oven saves valuable time.



### Advantages:

- Fast, even tempering
- Wide temperature range
- Quality "Made in Germany"

### Areas of application:



Electronics /  
Semiconductor Industry



Basic Research /  
Research Institutes



Plastics Industry

Features	Customer benefits	Characteristics
APT.line™	<ul style="list-style-type: none"> <li>• Quick drying</li> <li>• Identical test conditions throughout the chamber interior</li> <li>• Independent of specimen size and quantity</li> </ul>	<b>APT.line™ for maximum precision</b> <ul style="list-style-type: none"> <li>• Uniform circulation even under full load</li> <li>• Homogeneous temperature conditions throughout specimen material</li> </ul>
Temperature range	<ul style="list-style-type: none"> <li>• Broad range of applications</li> <li>• Short warm up times</li> </ul>	<b>Standard up to 300 °C</b> <ul style="list-style-type: none"> <li>• Large power reserves</li> </ul>
Inner chamber concept	<ul style="list-style-type: none"> <li>• Maximum occupational safety</li> <li>• Easy loading and unloading of specimen material</li> <li>• Easy cleaning</li> </ul>	<b>Inner chamber made of stainless steel</b> <ul style="list-style-type: none"> <li>• Very tight door closure with 2-point door latch</li> <li>• Low heat dissipation due to 60 mm insulation</li> <li>• Rack with tilt protection</li> <li>• No permanent fixtures</li> </ul>
Standard equipment	<ul style="list-style-type: none"> <li>• Reliable, easy handling</li> </ul>	<b>Comprehensive standards</b> <ul style="list-style-type: none"> <li>• Microprocessor control</li> <li>• Ergonomically positioned controller.</li> <li>• PT 100 temperature sensor</li> </ul>
Quality	<ul style="list-style-type: none"> <li>• Reliable devices with long service lives</li> <li>• Short delivery times</li> <li>• Minimal maintenance and operating costs</li> </ul>	<b>Premium quality</b> <ul style="list-style-type: none"> <li>• Highly automated</li> <li>• Series production</li> <li>• High-quality materials, state-of-the-art production technology</li> <li>• High standard according to DIN 12880 (27-point measurement)</li> </ul>
Accessories and Services	<ul style="list-style-type: none"> <li>• Flexible solution in terms of size, type and equipment</li> <li>• Optimal solution for numerous applications</li> <li>• BINDER INDIVIDUAL for customer-specific solutions</li> <li>• Worldwide BINDER Service</li> </ul>	<b>Comprehensive product portfolio</b> <ul style="list-style-type: none"> <li>• Size 23 to 240 liters</li> <li>• Additional product lines with humidity, light, CO2 or vacuum</li> <li>• Voltage variants (UL) and certificates</li> <li>• Various options: Door with viewing window, access ports, reinforced shelves, Data Logger Kits</li> <li>• Worldwide service network</li> </ul>

- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range from 5 °C above ambient temperature to 300 °C
- DS control with integrated timer 0 to 99,59 hrs
- 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
- FD 23 with space-saving door mechanism
- BINDER test confirmation

**FD 23**

▶ Exterior dimensions	
Housing	
Width (mm)	435
Height (incl. feet/castors) (mm)	495
Depth (plus connections and fittings) (mm)	520
Depth (incl. connections and fittings) (mm)	605
Wall clearance, rear (mm)	100
Wall clearance, side (mm)	100
Exhaust duct (outer Ø mm)	52
Steam space volume (l)	36
Number of doors (ea.)	1

▶ Interior dimensions	
Width (mm)	222
Height (mm)	330
Depth (mm)	300
Interior volume (l)	20
Racks (number standard/max.)	2 / 3
Load per rack (kg)	12
Permitted total load (kg)	25
Weight (empty) (kg)	33

▶ Temperature data	
Temperature range approx. 5 °C above ambient temperature to (°C)	300
Temperature variation	
at 70 °C (± K)	0,8
at 150 °C (± K)	2,2
at 300 °C (± K)	4,3
Temperature fluctuation at 70 °C (± K)	0,3
Warm-up time 1)	
to 70 °C (min.)	7
to 150 °C (min.)	22
to 300 °C (min.)	45
Recovery time after doors were open for 30 sec. 1)	
at 70 °C (min.)	2
at 150 °C (min.)	4
at 300 °C (min.)	9

**FD 23**

▶ Ventilation data	
Ventilation	
at 70 °C (x/h)	59
at 150 °C (x/h)	64
at 300 °C (x/h)	53

▶ Electrical data	
IP protection class acc. to EN 60529	IP 20
Voltage (± 10%) 50 / 60 Hz (V)	230
Nominal power (kW)	0,8
Energy consumption	
at 70 °C (W)	145
at 150 °C (W)	300
at 300 °C (W)	720

1) To 98% of the set value

All technical data are specified for units with standard equipment at an ambient temperature of 25 °C and a line voltage fluctuation of ±10%. These average values have been determined according to the BINDER factory standard, respecting the recommended wall clearances of 10% of the height, width and depth of the inner chamber. Differing ambient temperatures and production-related device-specific variances can lead to varying technical data.

Therefore, we recommend individual customer-specific calibration or validation for applications on the limit of the permitted ambient temperature range.

**Numerous access ports**

With silicone plugs for introducing external measuring instruments into the chamber, access ports with 10, 30, 50 mm diameters.

**Door with window and interior lighting**

For optimal process control in the inner chamber, available for all device sizes.

**Door lock**

Prevents unauthorized access to the process sequences in the chamber.

**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.

**FD 23**

Access ports with silicone plug, 10, 30, 50, 100 mm	<input type="radio"/>
Anti-slip rubber pads (1 set of 4 pieces) for safe stacking (not possible for FD 23)	<input type="radio"/>
Independent adjustable temperature safety device class 3.1 (DIN 12880) with optical alarm	<input type="radio"/>
Analog temperature output, 4 - 20 mA with 6-pin DIN socket (output not adjustable)	<input type="radio"/>
Over temperature alarm, audible, can be switched off. Temperature limit can be set at the independent, adjustable temperature safety device	<input type="radio"/>
Securing elements for additional fastening of racks (1 set of 4 pieces)	<input type="radio"/>
Temperature measurement acc. to DIN 12880 at 150 °C or at specified testing temperature with measuring protocol and certificate	<input type="radio"/>
Factory calibration certificate. Measurement in center of chamber at 150 °C (302 °F) or at specified testing temperature	<input type="radio"/>
Extension to factory calibration certificate. Each additional measurement at additional measuring point or temperature	<input type="radio"/>
Data Logger Kit T 350: For continuous temperature recording of 0 °C to 350 °C. Kit includes 1 data logger, PT 100 sensor with 2 m Teflon extension cable and 1 fixture for mounting to the BINDER unit	<input type="radio"/>
Data Logger Software: Configuration and evaluation software for all BINDER Data Logger Kits, incl. data cable	<input type="radio"/>
Rack, chrome-plated	<input type="radio"/>
Rack, stainless steel	<input type="radio"/>
Shelf, perforated, stainless steel	<input type="radio"/>
Locking door handle with key	<input type="radio"/>
Door gasket, FKM (Viton)	<input type="radio"/>
Door with window 180 x 180 mm and interior lighting (15 W)	<input type="radio"/>