

## Drying and heating chambers with forced convection

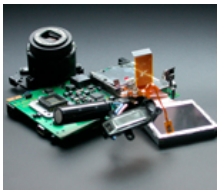
A BINDER FD series drying oven is always used when fast drying and sterilization is required. Thanks to its fully homogeneous temperature distribution, quick dynamics and powerful fan, it saves valuable time.



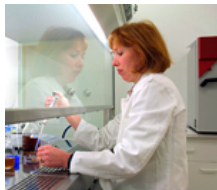
### Advantages:

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

### Areas of application:



Electronics /  
Semiconductor Industry



Basic Research /  
Research Institutes



Plastics Industry

Features	Customer benefits	Characteristics
<b>APT.line™</b>	<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>
<b>Temperature range</b>	<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>
<b>Inner chamber concept</b>	<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>
<b>Standard equipment</b>	<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>
<b>Quality</b>	<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>
<b>Accessories and Services</b>	<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 hrs
- Digital temperature setting with an accuracy of one degree
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- Adjustable ventilation by means of front ventilation flap slide and rear exhaust Ø 50 mm
- Units up to 115 liters are stackable
- 2 chrome-plated racks included
- BINDER test certificate

**FD 115**

▶ Exterior dimensions	
Width (mm)	834
Height (incl. feet) (mm)	702
Depth (mm)	645
Plus door handle and connection (mm)	105
Wall clearance, rear (mm)	100
Wall clearance, side (mm)	160
Exhaust duct (outer Ø mm)	52
Steam space volume (l)	158
Number of doors (ea.)	1

▶ Interior dimensions	
Width (mm)	600
Height (mm)	480
Depth (mm)	400
Interior volume (l)	115
Racks (number standard/max.)	2 / 6
Load per rack (kg)	20
Permitted total load (kg)	50
Weight (empty) (kg)	62

▶ 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)	1,8
at 300 °C (± K)	3,9
Temperature fluctuation (± K)	0,3
Warm-up time 1)	
to 70 °C (min.)	7
to 150 °C (min.)	28
to 300 °C (min.)	49
Recovery time after doors were open for 30 sec. 1)	
at 70 °C (min.)	2
at 150 °C (min.)	5
at 300 °C (min.)	12

**FD 115**

<b>Ventilation data</b>	
Ventilation	
at 70 °C (x/h)	29
at 15 °C (x/h)	32
at 30 °C (x/h)	26

<b>Electrical data</b>	
IP protection class acc. to EN 60529	IP 20
Voltage ( $\pm 10\%$ ) 50 / 60 Hz (V)	230
Nominal power (kW)	1,6
Energy consumption	
at 70 °C (W)	230
at 150 °C (W)	544
at 300 °C (W)	1100

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  $\pm 10\%$ . 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.



### Numerous access ports

With silicone plugs for introducing external measuring instruments into the chamber, access ports with 10, 30, 50, 100 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 115**

Access ports with silicone plug, 10, 30, 50, 100 mm	<input type="radio"/>
Anti-slip rubber pads for safe stacking (1 set of 4 pieces)	<input type="radio"/>
Independent temperature safety device class 3.1 (DIN 12880) with optical alarm	<input type="radio"/>
Analog output for temperature 4 - 20 mA with 6-pin DIN socket (output not adjustable)	<input type="radio"/>
Switchable audible alarm for over temperature. Adjustable limit on the independent temperature safety device	<input type="radio"/>
Fasteners for additional security for racks (1 set of 4)	<input type="radio"/>
Temperature measurement acc. to DIN 12880 (27 measuring points, for 23 liter devices 15 measuring points) at 150 °C or at specified temperature with measuring protocol and certificate	<input type="radio"/>
Calibration certificate, measurement in center of chamber at 150 °C or at specified testing temperature	<input type="radio"/>
Extension to calibration certificate. Each additional measurement at additional measuring point or testing 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="checkbox"/>
Rack, stainless steel	<input type="radio"/>
Perforated shelf, stainless steel	<input type="radio"/>
Door lock	<input type="radio"/>
Door gasket, FKM (Viton)	<input type="radio"/>
Door with window 320 x 260 mm and interior lighting (15 W)	<input type="radio"/>