

**Heating chambers with forced convection** The multi-talented BINDER FED series provides almost unlimited capacity and is particularly adaptable. With advanced timing functions and a digitally controllable fan, temperature and convection conditions are easily controlled.



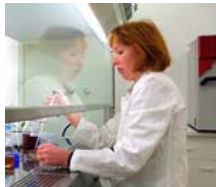
#### Advantages:

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

#### Areas of application:



Electronics /  
Semiconductor Industry



Basic Research /  
Research Institutes



Plastics Industry

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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>• RS 422 interface</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 53 to 720 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>

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- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range from 5 °C above ambient temperature to 300 °C
- MS controller with several 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
- Adjustable ventilation by means of front ventilation flap slide and rear exhaust Ø 50 mm
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- RS 422 interface for use with APT-COM™ DataControlSystem communication software 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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**FED 400**

▶ Exterior dimensions	
Width (mm)	1234
Height (incl. feet) (mm)	1022
Depth (mm)	765
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)	498
Number of doors (ea.)	2

▶ Interior dimensions	
Width (mm)	1000
Height (mm)	800
Depth (mm)	500
Interior volume (l)	400
Racks (number standard/max.)	2 / 10
Load per rack (kg)	35
Permitted total load (kg)	90
Weight (empty) (kg)	145

▶ Temperature data	
Temperature range approx. 5 °C above ambient temperature to (°C)	300
Temperature variation	
at 70 °C (± K)	1
at 150 °C (± K)	2,5
at 300 °C (± K)	4,8
Temperature fluctuation at 70 °C (± K)	0,3
Warm-up time 1)	
to 70 °C (min.)	18
to 150 °C (min.)	35
to 250 °C (min.)	60
Recovery time after doors were open for 30 sec. 1)	
at 70 °C (min.)	2
at 150 °C (min.)	17
at 300 °C (min.)	21

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## FED 400

▶ Ventilation data	
Ventilation	
at 70 °C (x/h)	17
at 150 °C (x/h)	18
at 300 °C (x/h)	16

▶ Electrical data	
IP protection class acc. to EN 60529	IP 20
Voltage ( $\pm 10\%$ ) 50 / 60 Hz (V)	400 3N~
Nominal power (kW)	3,4
Energy consumption	
at 70 °C (W)	520
at 150 °C (W)	1200
at 300 °C (W)	2340

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.

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**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.

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**FED 400**

Access ports with silicone plug, 10, 30, 50, 100 mm	<input type="radio"/>
HEPA fresh-air filter, Class H 14 (according to EN 1822, min. 99.995% for 0.1-0.3 µm particles)	<input type="radio"/>
Fasteners for additional security for racks (1 set of 4)	<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"/>
Temperature measurement acc. to DIN 12880 at 150 °C or at specified testing 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="radio"/>
Rack, stainless steel	<input type="radio"/>
Reinforced rack, stainless steel, with 1 set of fasteners (4 pieces), max. load 70 kg	<input type="radio"/>
Perforated shelf, stainless steel	<input type="radio"/>
Door lock	<input type="radio"/>
Door gasket, FKM (Viton)	<input type="radio"/>
Reinforced inner chamber, including 2 reinforced racks (maximum total load 270 kg, max. load per rack 70 kg)	<input type="radio"/>
2 doors each with window 470 x 290 mm and interior lighting (30 W)	<input type="radio"/>
Increased air-exchange rate through high-performance fan	<input type="radio"/>

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