

## Safety drying oven

The BINDER FDL 115 with silicone and dust-free inner chamber, as well as symmetric airflow dries specimens containing solvents and thus this safety drying oven meets all EN 1539 requirements.



### Advantages:

- Defined solvent quantity according to EN 1539
- Wide temperature range up to 300 °C (572 °F)

### Areas of application:



Chemicals



Surface Technology

Features	Customer benefits	Characteristics
APT.line™	<ul style="list-style-type: none"> <li>• Same test conditions throughout the chamber interior</li> <li>• Independent of specimen size and quantity</li> </ul>	<p><b>APT.line™ preheating chamber technology for maximum precision</b></p> <ul style="list-style-type: none"> <li>• Uniform circulation throughout the inner chamber</li> <li>• Homogeneous temperature conditions throughout test specimens</li> </ul>
Safety concept	<ul style="list-style-type: none"> <li>• Defined solvent quantity</li> <li>• Safe standard-compliant drying</li> </ul>	<ul style="list-style-type: none"> <li>• Complies with EN 1539:                             <ul style="list-style-type: none"> <li>• Fresh air monitoring with automatic switchoff</li> <li>• Audible and visual alarm</li> <li>• Class 2 independent adjustable temperature safety device</li> </ul> </li> <li>• Safety class IP 33</li> <li>• Easy to replace fresh air filter</li> </ul>
Performance feature	<ul style="list-style-type: none"> <li>• Short warm up times</li> <li>• Broad range of applications, e.g. coil coating tests</li> </ul>	<ul style="list-style-type: none"> <li>• High air exchange rate</li> <li>• Monitored air exchange volume</li> <li>• Large power reserves</li> <li>• Temperature range up to 300 °C (572 °F)</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 to clean</li> </ul>	<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 (2.36 inch) insulation</li> <li>• Rack with tilt protection</li> <li>• Complete inner chamber made of stainless steel</li> <li>• No permanent fixtures</li> <li>• Silicone free</li> <li>• Viton (FKM) door seal</li> </ul>
Controller	<ul style="list-style-type: none"> <li>• Programmable controller with intelligent temperature control and weekly program timer</li> </ul>	<ul style="list-style-type: none"> <li>• Convenient operation and documentation</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>	<ul style="list-style-type: none"> <li>• Premium quality made in Germany</li> <li>• Highly automated series production</li> <li>• High-quality materials, state-of-the-art production technology</li> </ul>
Unit options and service	<ul style="list-style-type: none"> <li>• Optimal solution for numerous applications</li> <li>• BINDER INDIVIDUAL for customer-specific solutions</li> <li>• Worldwide BINDER Service</li> </ul>	<p><b>Comprehensive product portfolio:</b></p> <ul style="list-style-type: none"> <li>• Various options: temperature measurement of the specimen, calibration certificate</li> <li>• Control and documentation software APT-COM™</li> <li>• Drying ovens, vacuum drying ovens, climate chambers</li> <li>• Worldwide service network</li> </ul>

- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- All safety features met according to EN 1539
- Temperature range from 5 °C (9 °F) above ambient temperature to 300 °C (572 °F)
- MP controller with 2 programs with 10 sections each, or alternatively one program with 20 sections
- The time of an individual program step can be set to max. 99.59 hours or 999.59 hours. This adjustment applies to all program sections.
- Integrated weekly program timer with real-time function
- Adjustable ramp function via program editor
- Digital temperature setting with an accuracy of one degree
- Elapsed time indicator
- Door gasket FKM (for max. temperature of 200 °C / 392 °F)
- Replaceable fresh-air filter cartridge. Class F6 (EU6 fine-particle filter for particle sizes 1 µm to 10 µm)
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- Fresh-air monitoring with visual and audible alarm and automatic deactivation of heating
- Rear exhaust connector Ø 100 mm (4 inch)
- RS 422 interface for use with APT-COM™ DataControlSystem communication software
- Units up to 115 liters (4.1 cu.ft.) are stackable
- 2 chrome-plated racks included
- BINDER test certificate

## FDL 115

▶ Exterior dimensions	
Width (mm)	835 / 32.9
Height (incl. feet) (mm)	800 / 31.5
Depth (plus door handle 50 mm / 2.0 inch) (mm/inch)	685 / 27.0
Wall clearance, rear (mm/inch)	100 / 3.9
Wall clearance, side (mm/inch)	100 / 3.9
Exhaust duct (outer Ø mm/inch)	100 / 3.9
Steam space volume (l)	156 / 5.5

▶ Interior dimensions	
Width (mm/inch)	600 / 23.6
Height (mm/inch)	435 / 17.1
Depth (mm/inch)	435 / 17.1
Interior volume (l/cu.ft.)	115 / 4.1
Racks (number standard/max.)	2 / 5
Load per rack (kg/lbs.)	20 / 44
Permitted total load (kg/lbs.)	50 / 110
Weight (empty) (kg/lbs.)	90 / 199

▶ Temperature data	
Temperature range approx. 5 °C (9 °F) above ambient temperature to (°C/°F)	300 / 572
Temperature variation	
at 70 °C (158 °F) (± K)	1.5
at 150 °C (302 °F) (± K)	2.5
at 300 °C (572 °F) (± K)	4
Temperature fluctuation (± K)	0.3
Warm-up time 1)	
at 70 °C (158 °F) (± K)	7
at 150 °C (302 °F) (± K)	17
at 300 °C (572 °F) (± K)	44
Recovery time after doors were open for 30 sec. 1)	
at 70 °C (158 °F) (± K)	1
at 150 °C (302 °F) (± K)	3
at 300 °C (572 °F) (± K)	6

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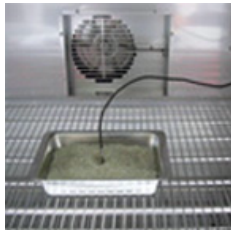
▶ Ventilation data	
Ventilation (approx. x/min.)	3
Air circulation (approx. x/min.)	40
Exhaust air volume flow (approx. l/min. m³/h)	400 (24.0)
Air flow velocity (m/sec)	0.8 - 1.2
Highest permitted solvent quantity (g/lbs.)(at T-180 °C, M-100g/mol, U-40g/m³, K=0.5) (g)	6.65 / 0.014

▶ Electrical data	
IP protection class acc. to EN 60529	IP 33
Voltage (± 10%) 50 / 60 Hz (V)	230
Nominal power (kW)	2.9
Energy consumption	
at 150 °C (302 °F) (W)	1098

- 1)  
 T = drying temperature  
 M = molecular mass  
 U = lower explosion limit  
 K = solvent vapor concentration as percentage of lower explosion limit

2) To 98% of the set value

All technical data are specified for units with standard equipment at an ambient temperature of 25 °C (77 °F) and a line voltage fluctuation of ±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.



### Temperature measurement of the specimen

Additional PT 100 temperature sensor for accurate temperature measurement of the specimen and digital display of measured values. Recording of measured data via RS 422 interface possible.



### 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.

**FDL 115**

Access ports with silicone plug, 10 mm (0.39 inch), 30 mm (1.18 inch)	<input type="radio"/>
Rack,chrome-plated or stainless steel	<input type="radio"/>
Perforated shelf, stainless steel	<input type="radio"/>
Door lock	<input type="radio"/>
Door gasket made of of high temperature resistant silicone for operating temperatures > 200 °C (392 °C)	<input type="radio"/>
Specimen temperature display with clip temperature sensor and 4 - 20 mA analog output (e.g. chart recorder connection), accessible via 6-pin DIN socket	<input type="radio"/>
Calibration certificate, measurement in center of chamber at 150 °C (302 °F) 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"/>
Temperature measurement acc. to DIN 12880 (27 measuring points) at 150 °C or at specified temperature with measuring protocol and certificate	<input type="radio"/>
Replacement air filter (class F6/EU6 – for particle sizes between 1 _m and 10 _m), 100x520x22 mm (3.94x20.47x0.87 inch), with aluminum frame	<input type="radio"/>