

MECHANICAL CONVECTION DRYING OVEN (300°C)



Mechanical Convection Drying Oven (300°C) - ToronOVEN™ MC3

ToronOVEN™ MC3 (300°C) is an advanced forced-air blast drying oven engineered for precision high-temperature thermal processing in demanding laboratory, research, and industrial environments. Combining a maximum operating temperature of 300°C with a comprehensive PMMA II programmable control system, the ToronOVEN™ MC3 delivers tighter temperature uniformity, multi-segment programming, and adjustable fan speed — making it the ideal choice for applications where the basic drying oven falls short. Seven capacity options span 64 L to 1,000 L to meet a wide range of throughput requirements.

The ToronOVEN™ MC3 (300°C) Mechanical Convection Drying Oven is purpose-built for laboratories and production environments that require advanced thermal control at elevated temperatures. At its core is the PMMA II operating system — a full-featured programmable controller with an LCD that simultaneously displays all key operating parameters: temperature setpoint, actual temperature, timer, fan speed, and program status. Beyond basic setpoint-and-hold capability, the PMMA II supports 10-segment ramp-and-soak programming with up to 100 consecutive execution cycles, enabling complex, multi-step thermal protocols for accelerated aging, stepwise drying sequences, curing procedures, and other demanding applications.

The working chamber is constructed from mirror-finish stainless steel with freely adjustable shelving, enclosed in a cold-rolled steel exterior with an electrostatic powder-coat finish. A reinforced door seal strip and rotating two-stage locking mechanism maintain chamber integrity at sustained high temperatures, while a high-performance sensor provides live temperature feedback to the controller. The preheating chamber design conditions incoming air before it reaches the main workspace, and both power-supply recovery and appointment scheduling functions ensure seamless workflow integration — whether running short drying cycles or extended overnight programs. As a high-temperature blast drying oven with genuine programmable precision, the ToronOVEN™ MC3 (300°C) is the trusted platform for research, quality control, and process validation at up to 300°C.

APPLICATIONS

Mechanical Convection Drying Oven (300°C) - ToronOVEN™ MC3

Applications

The ToronOVEN™ MC3 (300°C) blast drying oven is well suited to demanding thermal processing applications, including:

- High-temperature sample drying & dehydration
- Dry heat sterilization of lab ware & instruments
- Annealing & stress relief of metals & alloys
- High-temperature curing of coatings & adhesives
- Ashing & loss-on-ignition preparation
- Ceramic & composite pre-sintering
- Accelerated aging & stability testing with custom ramp-soak profiles
- Electronics component baking & outgassing
- Pharmaceutical & medical device processing
- Material research & quality-control validation



FEATURES

Mechanical Convection Drying Oven (300°C) - ToronOVEN™ MC3 Key Features

- Cold-rolled steel exterior with electrostatic powder-coat finish; mirror-finish stainless steel inner chamber with reinforced seal strip and freely adjustable shelving — built to sustain continuous operation at up to 300°C
- PMMA II operating system with LCD simultaneously displays all active parameters — temperature setpoint, actual temperature, timer, fan speed, and program status — for complete at-a-glance process visibility
- Comprehensive control suite: closed-loop temperature regulation, extended countdown/count-up timing (0–9,999 min or hours), full programmable ramp-and-soak profiles, 6-level adjustable fan speed, and independent over-temperature alarm protection
- Heavy-duty door with rotating two-stage locking structure and high-temperature seal strip maintains a consistent, high-integrity chamber seal at sustained 300°C operating conditions, minimizing heat loss and temperature deviation
- Preheating chamber design thermally conditions incoming air before it enters the main workspace, improving cross-section temperature uniformity and shortening stabilization time after door openings or sample loading
- Power-supply recovery function automatically restores the last active setpoint and program state after an unexpected power interruption — protecting long-duration unattended thermal processes from costly disruption
- Appointment scheduling function allows users to pre-program a delayed start time so the drying oven begins heating automatically at the designated hour — enabling overnight or off-hours operation without manual intervention
- Advanced programmable engine supports 10 ramp-and-soak segments per cycle with up to 100 consecutive execution cycles, enabling complex multi-step thermal protocols for accelerated aging, stepwise drying, and precision heat-treatment applications

THEORY & METHOD

Theory and Method

The ToronOVEN™ MC3 (300°C) operates on the principle of forced-air convection. An electrically powered heating element raises the internal chamber temperature, while a variable-speed centrifugal fan — adjustable across six discrete speed levels — continuously circulates heated air throughout the working space. This blast drying mechanism eliminates temperature stratification and delivers significantly faster, more uniform heat transfer than passive gravity-convection ovens. The ability to fine-tune fan speed allows users to balance heat transfer rate against sample sensitivity, making the ToronOVEN™ MC3 suitable for both robust industrial loads and delicate laboratory specimens.

A high-precision sensor continuously monitors the chamber temperature and feeds live data to the PMMA II microprocessor controller. The controller uses closed-loop PID (Proportional-Integral-Derivative) algorithms to regulate heater output, maintaining temperature fluctuation within $\pm 0.8^{\circ}\text{C}$ at 150°C — a tighter tolerance than the basic GZX drying oven series. Temperature uniformity across the working chamber is maintained within $\pm 2\%$ at 150°C . An independent over-temperature alarm circuit provides a hardware-level safety layer, triggering an alert and cutting heater power if the chamber temperature exceeds the configured safety threshold.

The PMMA II programmable engine supports 10-segment ramp-and-soak profiles with up to 100 consecutive execution cycles, enabling complex multi-step thermal protocols for accelerated aging, staged drying, or precise heat-treatment sequences. The preheating chamber design conditions incoming air before it enters the main workspace, further improving temperature uniformity and reducing recovery time. Power-supply recovery automatically restores the last active setpoint after a power interruption, and the appointment scheduling function allows users to pre-configure a delayed start time — the drying oven begins heating automatically at the designated time without manual intervention.

TECHNICAL SPECIFICATIONS

Mechanical Convection Drying Oven (300°C) - ToronOVEN™ MC3 Technical Specifications

Parameter	ToronOVEN™ MC364	ToronOVEN™ MC3129	ToronOVEN™ MC3210	ToronOVEN™ MC3280	ToronOVEN™ MC3452	ToronOVEN™ MC3650	ToronOVEN™ MC31000
Volume (L)	64	129	210	280	452	650	1,000
Temperature Range (°C)	RT+5 ~ 300						
Temp. Resolution (°C)	0.1						
Temp. Fluctuation at 150°C (°C)	±0.8						
Temp. Uniformity at 150°C (%)	±2						
Heating Rate to 150°C (°C/min)	>5						
Rated Power (W)	1,550	2,150	2,750	2,750	3,500	4,500	6,600
Voltage (V, Hz)	220 ±10%, 50 ±2% (110V is also available)						380 ±10%, 50 ±2%
Timer Range (min or h)	0 – 9,999						
Reservation Range (min)	0 – 9,999						

Parameter	ToronOVEN™ MC364	ToronOVEN™ MC3129	ToronOVEN™ MC3210	ToronOVEN™ MC3280	ToronOVEN™ MC3452	ToronOVEN™ MC3650	ToronOVEN™ MC31000
Interior Dimensions W×D×H (mm)	410×350×450	570×400×570	630×530×630	720×530×745	600×580×1,300	720×650×1,400	1,100×650×1,400
Exterior Dimensions W×D×H (mm)	555×566×722	715×616×842	775×746×902	865×746×1,017	774×845×1,704	865×866×1,730	1,220×850×1,730
Shelves — Standard / Max (pcs)	2 / 5	2 / 7	3 / 8	3 / 10	4 / 18	4 / 18	4 / 18
Max Load per Shelf (kg)	15						
Net Weight (kg)	42	57	77	97	145	—	—
Gross Weight (kg)	60	75	96	118	174	—	—
Package Size (mm)	675×726×872	835×776×992	895×906×1,052	985×906×1,167	894×1,005×1,854	—	—

RT = ambient room temperature. Temperature fluctuation and uniformity measured at 150°C. BGZ-1006 requires three-phase 380V power supply. "—" indicates data not provided by manufacturer. All dimensions in millimeters (mm). Specifications subject to change without notice.



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