



DRYING OVEN

Precision Thermal Processing for Every Laboratory Demand

ToronOVEN™ offers a complete, unified range of drying ovens, blast drying ovens, and vacuum ovens — engineered for laboratories, quality-control facilities, and industrial processing environments worldwide.

The ToronOVEN™ drying oven lineup is designed around a single principle: every laboratory workflow deserves the right level of thermal control — no more, no less. Whether your application calls for a straightforward blast drying oven for routine moisture removal, a fully programmable drying oven for multi-step heat-treatment protocols, or a vacuum oven for oxygen-sensitive and thermally delicate materials, there is a ToronOVEN™ model built specifically for that task.

Forced-air convection technology forms the foundation of the drying oven and blast drying oven series. An electrically powered heating element raises the chamber temperature while an internal fan continuously circulates heated air to eliminate thermal stratification and deliver uniform heat distribution. This approach provides faster, more even heat transfer than passive gravity-convection designs — a critical advantage for moisture removal, sterilization, curing, and material conditioning at temperatures from 200°C up to 500°C.

For processes where atmospheric pressure, oxygen exposure, or high processing temperatures compromise sample integrity, the vacuum oven series offers an alternative. By reducing chamber pressure to 133 Pa, the vacuum oven lowers the boiling point of moisture to approximately 51°C — enabling thorough drying of heat-sensitive materials at significantly reduced temperatures, free from oxidative degradation.

All ToronOVEN™ drying oven and vacuum oven models share a common commitment to build quality: mirror-finish stainless steel inner chambers, cold-rolled steel exteriors with electrostatic powder-coat finishes, robust multi-stage door locking structures, preheating chamber architecture, and power-supply recovery functions that protect long-duration, unattended processes from disruption.

Control System Platforms

- **Forced-Air Blast Drying Oven Series:** The ToronOVEN™ EL2, ToronOVEN™ MC2, ToronOVEN™ EL3, ToronOVEN™ MC3, ToronOVEN™ RD, ToronOVEN™ HT, and ToronOVEN™ L Series cover temperature ranges from 200°C to 500°C across chamber volumes from 23 L to 1,000 L — with control systems ranging from straightforward PMMA I setpoint management to fully programmable BRIGHT II intelligent controllers with touchscreen interfaces and RS-485 connectivity.
- **Vacuum Oven Series:** The ToronOVEN™ BE, ToronOVEN™ V-IZ, ToronOVEN™ V-IP, and ToronOVEN™ V-IPS Series deliver vacuum-assisted thermal processing at 133 Pa across chamber volumes from 25 L to 500 L. Independent multi-shelf temperature control, integrated pump options, direct vacuum degree management, and arc-angle interior construction serve the full spectrum of pharmaceutical, electronics, food science, and materials research applications.
- **Controllers:** PMMA I for routine workflows · PMMA II with LCD and programmable ramp-and-soak · BRIGHT I with dual over-temperature protection and RS-485 · BRIGHT II with 5-inch color touchscreen, 4M-point data logging, and 21 CFR Part 11 readiness.

Applications: Built for the Work Your Laboratory Does

ToronOVEN™ drying ovens and vacuum ovens serve a broad spectrum of thermal processing applications across research, quality control, pharmaceutical, and industrial environments.

- **Sample Drying & Moisture Determination:** Removal of moisture from soil, food, pharmaceutical, and material samples. Both atmospheric drying ovens and vacuum ovens are well-suited depending on sample sensitivity.
- **Dry Heat Sterilization:** Sterilization of glassware, lab ware, metal instruments, and heat-stable consumables at defined time-temperature profiles using forced-air blast drying ovens.
- **Pharmaceutical Processing & QC:** Vacuum drying of APIs, granules, and solid dosage intermediates; accelerated thermal stability testing; and in-process drying steps meeting process validation requirements.
- **Curing of Coatings & Resins:** Controlled curing of coatings, adhesives, composites, and epoxies across a wide temperature range — from standard 200°C drying oven cycles to high-temperature 400–500°C curing.
- **Annealing & Stress Relief:** Heat treatment of metals, alloys, polymers, and ceramics using programmable ramp-and-soak profiles available across the MC2, MC3, RD, and L series drying ovens.
- **Electronics Component Baking:** Burn-in testing, solder curing, outgassing of PCBs, sensors, and electronic assemblies. Vacuum oven processing eliminates oxidation risks during elevated-temperature exposure.

- Botanical & Cannabis Extraction: Purging of residual solvents from concentrates and botanical extracts under controlled vacuum and temperature conditions using the BE and V-IZ vacuum oven series.
- Accelerated Aging & Stability Testing: Complex multi-step aging protocols executed via 10-segment, 100-cycle programmable ramp-and-soak engines available in the MC2, MC3, RD, and L series drying ovens.
- Degassing & Outgassing: Removal of dissolved gases, trapped air, and volatile compounds from adhesives, resins, polymers, and silicones under 133 Pa vacuum oven conditions.
- Food Science & Agriculture Research: Moisture content determination, baking trials, and thermal processing validation in food manufacturing QC laboratories using both drying oven and vacuum oven configurations.
- Ashing & Loss-on-Ignition: High-temperature ashing and LOI preparation applications requiring sustained operation at 300°C–500°C, addressed by the ToronOVEN™ EL3, ToronOVEN™ MC3, and ToronOVEN™ HT series drying ovens.
- Quality Control & Incoming Inspection: Process validation, product conditioning, and thermal treatment in regulated manufacturing environments with full audit trail support via BRIGHT II data management.

Product Comparison: Complete ToronOVEN™ Product Range

Blast Drying Ovens

Model Series	Max Temp.	Volume Options	Temp. Fluctuation	Temp. Uniformity	Time Range	Fan Speed	Programmable Profiles
ToronOVEN™ EL2	200°C	23, 40, 76, 142, 234, 456 L	±1°C @ 105°C	±2.5%	0-999 min	Fixed	—
ToronOVEN™ MC2	250°C	40, 76, 142, 234, 456 L	±1°C @ 105°C	±2%	0-9,999 min/h	6-level	10-seg / 100-cycle
ToronOVEN™ EL3	300°C	64, 129, 210, 280, 452 L	±1°C @ 150°C	±2.5%	0-9,999 min/h	Fixed	—
ToronOVEN™ MC3	300°C	64, 129, 210, 280, 452, 650, 1,000 L	±0.8°C @ 150°C	±2%	0-9,999 min/h	6-level	10-seg / 100-cycle
ToronOVEN™ RD	300°C	64, 129, 210, 284, 452 L	±0.3-0.5°C @ 150°C	±1% (low) / ±2% (high)	0-9,999 min/h	6-level	10-seg / 100-cycle + RS-485

Model Series	Max Temp.	Volume Options	Temp. Fluctuation	Temp. Uniformity	Time Range	Fan Speed	Programmable Profiles
ToronOVEN™ L	300°C	65, 130, 280, 450 L	±0.3-0.5°C @ 150°C	±1.9-2.5°C	0-9,999 min/h	6-level	30-seg / 99-cycle, 4M data points

Vacuum Ovens

Series	Temp. Range	Volume Options	Vacuum Degree	Shelf Control	Pump	Timer	Special Feature
ToronOVEN™ BE 25	RT+5 ~ 250°C	25 L	133 Pa	Single zone	External (opt.)	0-999 min	Compact benchtop, glass door
ToronOVEN™ BE 53	RT+5 ~ 250°C	53 L	133 Pa	Single zone	External (opt.)	0-999 min	Compact benchtop, glass door
ToronOVEN™ V-IZ	RT+10 ~ 250°C	30, 53, 100, 250, 500 L	133 Pa	Independent per shelf	External (opt.)	0-9,999 min	Multi-zone independent shelf control
ToronOVEN™ V-IP	RT+10 ~ 250°C	30, 53, 100, 250, 500 L	133 Pa	Independent per shelf	Built-in (noise-reducing)	0-9,999 min	Integrated pump, self-contained system
ToronOVEN™ V-IPS	RT+10 ~ 250°C	30, 53, 100, 250, 500 L	133 Pa	Independent per shelf	Built-in (noise-reducing)	0-9,999 min	Direct vacuum control, arc-angle chamber, optional touchscreen

Why ToronOVEN™ : The Trusted Choice for Your Drying Oven & Vacuum Oven

When your laboratory, pharmaceutical operation, or industrial facility needs a reliable drying oven — whether a blast drying oven for everyday thermal processing or a sophisticated vacuum oven for oxygen-sensitive applications — ToronOVEN™ delivers the performance, build quality, and configuration options that match your actual requirements.

- One Range, Every Requirement: From a 23 L benchtop blast drying oven for routine sample drying to a 1,000 L floor-standing drying oven for large-scale production, and from a compact 25 L vacuum oven to a 500 L integrated pump

vacuum oven — ToronOVEN™ eliminates the need to source thermal processing equipment from multiple vendors.

- Proven Forced-Air Technology: Every blast drying oven in the ToronOVEN™ lineup uses forced-air convection with preheating chamber architecture — delivering uniform heat distribution, fast heat-up rates, and temperature fluctuation as tight as $\pm 0.3^{\circ}\text{C}$ — performance that passive gravity-convection drying ovens simply cannot achieve.
- Scalable Control Intelligence: Choose the right control system for your workflow: simple PMMA I setpoint management for routine drying oven tasks, PMMA II programmable ramp-and-soak for complex protocols, or BRIGHT II with touchscreen and 4-million-point data logging for regulated environments requiring 21 CFR Part 11 audit trails.
- Vacuum Oven for What Atmospheric Drying Cannot Reach: When sample integrity demands oxygen-free, low-temperature drying, the ToronOVEN™ vacuum oven series achieves 133 Pa — lowering the boiling point of moisture to $\sim 51^{\circ}\text{C}$ and eliminating oxidative degradation. Independent multi-shelf control means different products process simultaneously in the same evacuated chamber.
- Built for Continuous Operation: Power-supply recovery across every drying oven and vacuum oven model automatically restores the last active setpoint after any power interruption — protecting long-duration, unattended processes that cannot tolerate an uncontrolled restart. The double press-buckle door lock on the HT series maintains seal integrity at sustained $400\text{--}500^{\circ}\text{C}$ operation.
- Internationally Certified & Standards-Compliant: Every ToronOVEN™ drying oven and vacuum oven is designed and tested to IEC 61010-1, IEC 61010-2-010, ISO 9001, CE Marking, and ASTM E145. The RD and L series add EIA-485 and 21 CFR Part 11 readiness for networked, regulated laboratory deployments.



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