



TORONTECH

HIGH TEMPERATURE DRYING OVEN (400°C - 500°C)



High Temperature Drying Oven (400°C - 500°C) - ToronOVEN™ HT

ToronOVEN™ HT is a high-performance, heavy-duty high temperature oven engineered for laboratory and industrial applications that demand sustained, stable operation at extreme temperatures. Available in 400°C and 500°C variants across four chamber volumes — from 30 L to 225 L — the ToronOVEN™ HT combines a robust double press-buckle hinged door lock, PMMA II programmable control with auto self-tuning, and power-supply recovery to deliver dependable, repeatable thermal processing far beyond the range of conventional drying ovens.

The ToronOVEN™ HT high temperature drying oven is built for researchers, materials scientists, and industrial process engineers who require reliable, precision thermal processing at temperatures that standard drying ovens and blast drying ovens simply cannot reach. Two platform variants are available: the BGG-x8 series operates up to 400°C, while the BGG-x9 series extends operation to 500°C — both sharing identical chamber dimensions and external footprints, allowing facilities to choose or upgrade to higher temperature capability without changing bench or floor space requirements.

The working chamber is constructed from mirror-finish stainless steel with freely adjustable shelving, housed in a cold-rolled steel exterior with an electrostatic powder-coat finish. At these extreme operating temperatures, door integrity is critical: the ToronOVEN™ HT employs a double press-buckle hinged door lock — a dual-point latching mechanism that compresses the door seal more evenly and tightly than single-latch designs, minimizing heat loss and maintaining chamber stability throughout each cycle. The PMMA II control system provides an LCD readout of setpoint and actual temperatures, countdown timing, and — critically — an automatic self-tuning function that continuously optimizes PID parameters for accurate temperature control across the full operating range. Power-supply recovery ensures that all operating parameters and program states are retained through unexpected power interruptions, protecting long-duration high-temperature processes from disruption.

APPLICATIONS

High Temperature Drying Oven (400°C - 500°C) - ToronOVEN™ HT Applications

The ToronOVEN™ HT high temperature drying oven is suited to elevated-temperature thermal processing applications that exceed the capability of standard drying ovens, including:

- Ashing & loss-on-ignition (LOI) preparation
- Ceramic & refractory material sintering
- Annealing & hardening of metals & alloys
- Burnout of binders & organic materials
- High-temperature curing of coatings & composites
- Glass & enamel pre-treatment
- Catalyst activation & regeneration
- Materials research & quality-control testing at extreme temperatures
- Dry heat sterilization of heat-stable lab ware
- Semiconductor & electronics component processing



FEATURES

High Temperature Drying Oven (400°C - 500°C) - ToronOVEN™ HT Key Features



- Cold-rolled steel exterior with electrostatic powder-coat finish; mirror-finish stainless steel inner chamber with freely adjustable shelving — construction rated for sustained continuous operation at up to 400°C or 500°C depending on the selected series
- Double press-buckle hinged door lock applies uniform compression force across the full perimeter of the door seal — delivering a tighter, more consistent closure than single-latch designs and significantly reducing heat loss at the door interface during high-temperature operation
- PMMA II control system with LCD readout provides clear display of setpoint and actual temperature, countdown timer, and operational status — with built-in timing and auto self-tuning for accurate, adaptive temperature control across the full operating range
- Automatic self-tuning function continuously characterizes the thermal dynamics of the loaded chamber and applies optimized PID gains — eliminating the need for manual tuning and maintaining accurate temperature control as load configurations and setpoints change
- Power-supply recovery function retains all active setpoints and program states through unexpected power interruptions — ensuring no process data is lost and protecting long-duration high-temperature processes from requiring a full restart after a power event

THEORY & METHOD

Theory and Method

The ToronOVEN™ HT uses resistance heating rather than the fan-assisted forced-air convection found in blast drying ovens — a deliberate design choice for extreme-temperature operation where fan components and airflow management become engineering challenges. High-density resistance heating elements embedded in the chamber walls deliver thermal energy directly and uniformly to the working space, achieving stable setpoints from ambient room temperature plus 20°C all the way to 400°C (BGG-x8 series) or 500°C (BGG-x9 series).

Temperature is monitored by a precision thermocouple sensor that feeds continuous live data to the PMMA II microprocessor controller. Rather than relying on fixed PID parameters, the PMMA II incorporates an automatic self-tuning function: at start-up or on demand, the controller runs a brief auto-identification cycle to characterize the thermal dynamics of the actual load configuration, then calculates and applies optimized PID gains. This adaptive approach maintains accurate temperature control across the full operating range and compensates automatically for varying load masses, chamber sizes, and setpoints — without requiring manual tuning by the operator.

Door integrity is managed by the double press-buckle hinged door lock, a dual-point latching mechanism that applies uniform compression force across the full perimeter of the door seal. This minimizes heat loss at the door interface and prevents the hot-spot formation and seal degradation that single-latch doors are prone to at sustained 400–500°C operating temperatures. Power-supply recovery retains all setpoints and program states through unexpected power interruptions, ensuring that no process data or thermal history is lost during long-duration high-temperature runs.

TECHNICAL SPECIFICATIONS

High Temperature Drying Oven (400°C - 500°C) - ToronOVEN™ HT
Technical Specifications

Parameter	ToronOVEN™ HT 30	ToronOVEN™ HT 70	ToronOVEN™ HT 136	ToronOVEN™ HT 225
Volume (L)	30	70	136	225
Temperature Range (°C)	RT+20 ~ 400			
Temp. Resolution (°C)	0.1			
Temp. Fluctuation (°C)	±2			
Rated Power (W)	1,800	2,050	2,500	3,000
Voltage (V, Hz)	220, 50 (110V is also available)			

Parameter	ToronOVEN™ HT 30	ToronOVEN™ HT 70	ToronOVEN™ HT 136	ToronOVEN™ HT 225
Timer Range (min)	0 - 9,999			
Interior Dimensions W×D×H (mm)	300×300×350	400×400×450	450×550×550	500×600×750
Exterior Dimensions W×D×H (mm)	670×480×700	770×580×800	820×730×900	870×780×1,100
Number of Shelves (pcs)	2			
Net Weight (kg)	61	86	108	132
Gross Weight (kg)	87	110	138	165
Package Size (mm)	800×660×910	900×763×1,000	950×930×1,100	1,000×950×1,300



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