

CONSTANT TEMPERATURE OIL BATH



Constant Temperature Oil Bath — ToronOB™ CT Series

High-Temperature Oil Bath for Demanding Laboratory Applications

ToronOB™ CT Series is a super constant temperature oil bath instrument engineered for laboratory and light industrial applications requiring stable, uniform heat from ambient temperature up to 300°C.

The ToronOB™ CT is a super constant temperature oil bath instrument using oil as the heating medium — enabling reliable thermal processing at temperatures far above what conventional water-based baths can achieve. Covering ambient temperature up to 300°C across three model series (ToronOB™ CT 20, ToronOB™ CT 30, and ToronOB™ CT 50), this oil bath equipment addresses applications including viscometry, chemical synthesis, polymer testing, and materials research where water cannot serve as the bath medium due to its 100°C boiling point limitation.

Like the ToronWB™ CT water bath, the ToronOB™ CT is built around a combined internal and external circulating pump system that continuously circulates oil throughout the bath chamber — eliminating thermal stratification and delivering consistent temperature uniformity across all sample positions. The external circulation interface (10 mm OD / 8 mm ID) provides direct connection to jacketed reactors, viscometers, and other externally heated equipment, turning this oil bath instrument into a complete thermal conditioning platform for complex laboratory setups.

Each ToronOB™ CT model is available in standard and enhanced "A" display variants. The LED mode provides 0.1°C resolution at $\pm 0.1^\circ\text{C}$ fluctuation for routine oil bath workflows, while the LCD mode (0.01°C resolution) delivers temperature fluctuation as tight as $\pm 0.05^\circ\text{C}$ on the CY30A — performance that positions this oil bath equipment among the most precise constant-temperature oil bath instruments available at this price point. Touch-button LCD interface operation supports clean, reliable parameter adjustment during heated operation.

Three chamber sizes address the full range of throughput requirements: the compact ToronOB™ CT 20 (400×280×180 mm) for benchtop applications; the mid-size ToronOB™ CT 30 with two chamber configurations for flexibility; and the larger ToronOB™ CT 50 (400×350×350 mm) for multiple simultaneous samples or larger submerged vessels. High-efficiency heat preservation construction and measured value deviation correction are standard across all ToronOB™ CT models.

APPLICATIONS

Constant Temperature Oil Bath — ToronOB™ CT Series Applications

The ToronOB™ CT oil bath instrument serves the full range of elevated-temperature thermal conditioning applications that exceed the operating ceiling of conventional oil baths.

- Viscosity & Rheology Testing: Temperature-controlled oil bath conditioning for viscometers, kinematic viscosity testing per ASTM D445, and rheometer jacketed cell heating across the full RT-300°C operating range.
- Chemical Synthesis & Reaction Control: Stable elevated-temperature incubation for chemical reactions, distillation setups, and reflux condensation requiring sustained thermal control beyond oil bath temperature limits.
- Polymer Testing & Material Research: Controlled heating for polymer melt behavior, thermal analysis sample preparation, and material conditioning studies requiring precise stability from 100°C to 300°C.
- Pharmaceutical Synthesis & Stability Testing: High-temperature incubation for API synthesis, thermal degradation studies, and accelerated stability testing protocols requiring oil bath uniformity in a controlled oil bath instrument.
- External Circulation for Jacketed Equipment: Delivery of temperature-controlled oil to jacketed reactors, columns, and vessels via the external port — making this oil bath equipment a versatile thermal source for multi-component lab setups.
- Petrochemical & Lubricant QC: Flash point determination, oxidation stability testing, and high-temperature lubricant characterization requiring the sustained 300°C range of a circulating oil bath.
- Food Science & Fat Analysis: High-temperature fat extraction, oil stability determination, and cooking oil characterization protocols requiring precise temperature control across the 100-300°C working range.
- Electronics & Component Conditioning: Controlled-temperature aging, solder mask curing, and thermal conditioning of electronic components at sustained elevated temperatures in a circulating oil bath environment.



FEATURES

Constant Temperature Oil Bath — ToronOB™ CT Series Key Features

The ToronOB™ CT Series is engineered with every consideration for high-temperature oil bath laboratory operation — from display flexibility and circulation performance to precision temperature accuracy and long-term reliability.

- **300°C Operating Range with Oil Medium:** Oil as the heating medium extends this oil bath instrument's operating ceiling to 300°C — covering viscometry, high-temperature synthesis, polymer testing, and petrochemical QC workflows that conventional oil baths cannot address.
- **Combined Internal & External Oil Circulation:** An integrated pump delivers both internal bath uniformity and external circulation to connected jacketed vessels or reactors at up to 8 L/min — through a standard 10 mm OD / 8 mm ID external port — without requiring a separate circulation pump.
- **LED / LCD Dual Display with Touch Buttons:** LED dual-window display provides simultaneous measured/set readout at 0.1°C resolution. LCD mode improves to 0.01°C resolution with touch-button operation — meeting the display and stability requirements of ASTM D445 and other standardized viscosity test methods.
- **±0.05°C Temperature Fluctuation (ToronOB™ CT 30, LCD):** The ToronOB™ CT 30 in LCD mode delivers ±0.05°C fluctuation — a level of stability that qualifies this oil bath equipment for precision kinematic viscosity determination and temperature-sensitive measurement protocols where bath stability directly affects result accuracy.
- **Measured Value Deviation Correction:** A built-in deviation correction function enables operators to offset the displayed temperature against a calibrated external reference — maintaining this oil bath's display accuracy over its service life and supporting calibration documentation in regulated testing environments.
- **High-Efficiency Heat Preservation Construction:** The oil bath chamber uses high-efficiency thermal insulation material that minimizes heat loss through the chamber walls — reducing steady-state energy consumption at elevated setpoints and improving temperature recovery speed after the bath is accessed or samples are exchanged.

- Three Chamber Sizes for Throughput Flexibility: ToronOB™ CT 20 (compact), ToronOB™ CT 30 (two internal chamber configurations for versatility), and ToronOB™ CT 50 (large-volume) provide a scalable range of oil bath working volumes — so laboratories choose oil bath equipment precisely sized for their throughput requirements.
- Standard External Circulation Port Dimensions: The external circulation interface uses 10 mm OD / 8 mm ID port dimensions compatible with standard laboratory tubing — enabling adapter-free connection to jacketed analytical instruments, reactors, and flow-through systems already in use in the laboratory.

THEORY & METHOD

Theory & Method

The ToronOB™ CT Series applies closed-loop temperature control and forced oil circulation — the same proven architecture as the ToronWB™ CT oil bath — adapted for oil as the heating medium to extend the usable range to 300°C.

- Oil as the Heating Medium: Using oil instead of water overcomes the 100°C ceiling imposed by water's boiling point at atmospheric pressure. Laboratory-grade thermal oils maintain stable liquid-phase properties from ambient up to 300°C, enabling uniform conductive heat transfer to submerged samples and vessels across the entire working range without the pressure management requirements of high-temperature water systems. The ToronOB™ CT is the appropriate oil bath instrument for any elevated-temperature application that a standard oil bath cannot reach.
- Forced Oil Circulation & Uniformity: An internal pump continuously circulates heated oil throughout the bath chamber, eliminating the thermal stratification layers that form in static heated oil baths. This delivers $\pm 0.02^\circ\text{C}$ temperature uniformity (ToronOB™ CT 30A in LCD mode) across all sample positions — critical for kinematic viscosity testing, polymer characterization, and other protocols where sample-to-sample temperature consistency directly affects measurement accuracy. External circulation at 8 L/min (ToronOB™ CT 30/ ToronOB™ CT 50) extends this thermostatic stability to jacketed reactors or external vessels.
- Closed-Loop Precision Temperature Control: A precision sensor continuously monitors the oil bath temperature and feeds live data to the microprocessor controller. The controller modulates heater output to maintain the setpoint within

the specified tolerance — as tight as $\pm 0.05^{\circ}\text{C}$ (TToronOB™ CT 30A, LCD mode). The measured value deviation correction function allows the displayed reading to be offset against a calibrated reference, maintaining measurement accuracy across the instrument's operating life without hardware replacement.

- Dual LED/LCD Display Modes: LED dual-window mode simultaneously displays setpoint and measured temperatures at 0.1°C resolution for routine oil bath workflows. LCD mode upgrades resolution to 0.01°C with touch-button interface operation — supporting applications where this oil bath equipment must serve as a calibrated thermal reference or where test method specifications (such as ASTM D445) mandate demonstrated temperature resolution and bath stability within defined tolerances.

TECHNICAL SPECIFICATIONS

Constant Temperature Oil Bath — ToronOB™ CT Series Technical Specifications

Complete technical data for all ToronOB™ CT Series oil bath instruments. Fluctuation and uniformity values shown as LED / LCD where two operating modes apply.

Parameter	ToronOB™ CT 20/ToronOB™ CT 20A	ToronOB™ CT 30/ ToronOB™ CT 30A	ToronOB™ CT 50/ ToronOB™ CT 50A
Best Fit	Compact Oil Bath	Mid-Size - Best Precision	Large-Volume Oil Bath
Heating Medium	Oil		
Display Type	LED / LCD, touch buttons		
Temperature Range	RT ~ 300°C		
Temperature Resolution	0.1°C / 0.01°C		
Temperature Fluctuation	$\pm 0.1^{\circ}\text{C}$ (LED) / $\pm 0.5^{\circ}\text{C}$ (LCD)	$\pm 0.5^{\circ}\text{C}$ (LED) / $\pm 0.05^{\circ}\text{C}$ (LCD)	$\pm 0.1^{\circ}\text{C}$ (LED) / $\pm 0.5^{\circ}\text{C}$ (LCD)

Parameter	ToronOB™ CT 20/ToronOB™ CT 20A	ToronOB™ CT 30/ ToronOB™ CT 30A	ToronOB™ CT 50/ ToronOB™ CT 50A
Temperature Uniformity	±0.1°C (LED) / ±0.2°C (LCD)	±0.2°C (LED) / ±0.02°C (LCD)	±0.1°C (LED) / ±0.2°C (LCD)
Rated Power	1,800 W		
Voltage	220 V, 50 Hz (110V is also available)		
Pump Flow Rate	5 L/min	≥ 8 L/min	
External Circulation Port	OD 10 mm / ID 8 mm		
Internal Dimensions (W×D×H)	400 × 280 × 180 mm	400×300×250 mm / 440×280×250 mm	400 × 350 × 350 mm
Housing Dimensions (W×D×H)	460 × 400 × 350 mm	500×380×350 mm / 500×350×490 mm	460 × 420 × 520 mm
Opening Dimensions (W×D)	200 × 180 mm	200×180 mm / 260×250 mm	200 × 180 mm
Net Weight	14.9 kg	17.5 kg	20.3 kg
Gross Weight	17.4 kg	25.3 kg	40 kg
Package Size (W×D×H)	525 × 405 × 450 mm	525 × 410 × 520 mm	530 × 480 × 620 mm

RT = ambient room temperature. Specifications subject to change without notice. ToronOB™ CT 30/ ToronOB™ CT 30A offers two internal chamber configurations — confirm model variants for applicable dimensions. All dimensions in millimeters (mm).



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