

Specifications for the Procurement of Vertical Top-Loading Autoclave (50L-60L)

Delivery Terms:

1 to 120 calendar days from receipt of P.O.

Payment Terms:

1-30 days upon full delivery, installation, inspection and acceptance

Description/s:

2 UNIT Autoclave, Vertical Top-Loading (50L-60L)

Specifications:

1. General Requirements:

- Type: Vertical, floor standing type Top-loading System
- Chamber Capacity: 50L to 60L
- Suitable for sterilizing: laboratory glassware, media, instruments, liquids, and biohazard waste

2. Operation Modes: At least three (3) to four (4) programmable sterilization modes, including:

- Liquid with warming and/or Liquid without warming
- Solid/Instrument sterilization
- Agar dissolution/melting mode

Note: Agar Melting Mode must be capable of:

(a) Rapidly melting solidified agar at 60°C-100°C for 1-60 minutes

(b) Holding melted agar at 45°C-60°C for up to 24 hours to maintain it in liquid form

3. Temperature and Pressure Control:

- Sterilization Temperature Range: 105°C - 121°C
- Agar Dissolution: 60°C - 100°C (melting) / 45°C - 60°C (holding)
- Time Setting Range:
 - (a) Sterilization: 1 min - 250 min, remaining time should be displayed/indicated. The sterilization timer is activated only when load temperature reaches set temperature
- Holding Temperature Setting: 45°C to 60°C (programmable) for up to 24 hours
- Maximum working pressure: 0.11 - 0.26MPa
- Pressure gauge: 0MPa - 0.4MPa

4. Chamber and Construction:

- Chamber Material: Stainless Steel
- Internal surfaces must be corrosion-resistant and easy to clean
- Durable external housing (stainless steel or high-grade powder coating)

5. Lid and Safety Interlocks

- Lid Mechanism:
 - Preferably one-touch lever, electro-mechanical lock, or spring-assisted lock
 - Manual systems acceptable if equipped with dual-sensing safety interlocks

- Dual-Sensing Interlock Mechanism:
 - Prevents lid opening under pressure
 - Detects improper lid closure prior to sterilization start
- 6. Control System & Display
 - Digital PID controller or equivalent microprocessor system
 - Display panel must show:
 - o Temperature
 - o Pressure
 - o Remaining time
 - o Cycle status / progress bar
 - Memory Backup: Retains user programs and last settings in case of power failure
- 7. Safety Features and Alarms: The unit must have built-in protective mechanisms and alerts for:
 - Dual-sensing lid interlock
 - Lid not properly closed
 - Over-temperature cut-off
 - Over-pressure protection
 - Low water level (with alarm and auto cut-off)
 - Circuit breaker with GFCI protection
 - Pressure safety valve
 - Heater malfunction detection
- 8. Physical Requirements
 - External dimensions: Not exceeding 700 mm (W) × 700 mm (D) × 1250 mm (H)
- 9. Exhaust & Drainage System
 - Auto exhaust function with programmable pressure release
 - Drain hose must be provided
 - Exhaust collection bottle or tank must be included
- 10. Power – 220 to 240V AC, 50/60Hz
- 11. Delivery includes standard accessories:
 - Stainless steel wire baskets (at least 2 or based on chamber size)
 - Heater Cover (if applicable)
 - Drain Hose
 - Exhaust Bottle / Tank
 - Caster stopper for stabilization (Unit must be mobile with lockable caster wheels)
- 12. Documentation and Compliance: *Supplied with*
 - User Manual
 - Certificate of Conformance (COC)
 - Certificate of Calibration
 - Memory backup system for parameters
- 13. Installation, Calibration, and Qualification:

Supplier must perform:

 - Installation Qualification (IQ)
 - Operational Qualification (OQ)
 - Performance Qualification (PQ)

Upon commissioning the item must be calibrated by an ISO/IEC 17025:2017 accredited laboratory; Calibration must be done in at

least two (2) setpoints each for temperature and pressure and time
(refer to below table)

CALIBRATION SET POINTS		
Parameter	Unit	Set Points to Test
Temperature	°C	121°C
		105°C
Pressure	psi / kPa	~15 psi (~103.4 kPa) @121°C
		~30 psi (~206.8 kPa) @121°C
Time	minutes	15 minutes
		30 minutes

- Calibration certificate and sticker must be provided
- Calibration cost must be included in the offered unit price and not billed separately

14. One (1) year warranty on equipment (parts and services) against manufacturing defects

Purpose and Specifications Reasons:

The vertical, floor-standing autoclave is intended for the sterilization of laboratory apparatus, glassware, culture media, and biohazardous waste associated with microbiological analysis and drinking water sample decontamination. Its chamber capacity of 50L to 60L supports the processing of larger batch volumes, which is essential for ensuring efficient laboratory workflows and high-throughput analysis.

To enhance operational safety and ease of use, the unit must be equipped with a user-friendly lid system that ensures secure locking and sealing during pressurization and prevents accidental opening. A one-touch or semi-automatic open/close lid mechanism is preferred to reduce manual handling and enhance operator safety.

The autoclave must support precise and programmable sterilization cycles, including modes for liquids, solids, and agar melting/dissolution, enabling consistent and reproducible sterilization results. Features such as in-process cycle monitoring, programmable holding temperatures, and automatic exhaust systems will help ensure compliance with required microbiological and hygiene standards in laboratory testing.

By ensuring the complete and reliable sterilization of materials, this autoclave will minimize the risk of microbial contamination and support the production of valid quality results, in compliance with relevant regulatory requirements and laboratory quality assurance protocols.