



BIOLOGICAL SAFETY CABINET (70% RECIRCULATION)

Biological Safety Cabinet (70% Recirculation) - ToronSafeCab™ S

ToronSafeCab™ S is a Class II Type A2 biological safety cabinet engineered to provide simultaneous protection for the operator, the work sample, and the surrounding laboratory environment. Designed for handling low-to-moderate-risk biological agents (BSL-1 through BSL-2), this bio safety cabinet recirculates a portion of HEPA-filtered air within the work zone while exhausting the remainder through a dedicated exhaust HEPA filter — making it the most versatile and widely used safety cabinet configuration in modern biological research.

Constructed with a full SUS304 stainless steel interior and a removable brushed stainless steel work surface, the ToronSafeCab™ S combines biosafety performance with ease of decontamination. Its air-clean intelligent control system, ergonomic 10-degree tilted front window, and intelligent constant-wind-speed technology make it equally at home in clinical, pharmaceutical, and academic laboratory settings. Available in three working widths — 1000 mm, 1360 mm, and 1680 mm — this biological safety cabinet scales to suit single-operator or dual-operator workflows.

APPLICATIONS

Biological Safety Cabinet (70% Recirculation) - ToronSafeCab™ S Applications

The ToronSafeCab™ S bio safety cabinet is designed and manufactured for those applications:

- Handling of BSL-1 and BSL-2 biological agents and pathogens
- Microbiology and cell culture work requiring sterile conditions
- Pharmaceutical compounding and aseptic drug preparation
- Molecular biology, PCR setup, and nucleic acid work
- Clinical diagnostics, specimen processing, and serology

- Vaccine research and immunology studies
- Tissue engineering and in vitro cell-based assays
- Environmental and food safety microbial testing



FEATURES

Biological Safety Cabinet (70% Recirculation) - ToronSafeCab™ S Key Features



- Air-clean intelligent control system with full-color HD LCD display showing real-time inflow and downflow air velocities, filter remaining lifespan, fan and lighting status, UV lamp status, power interface status, and active alarm notifications
- Built-in digital clock with calendar display; UV sterilization scheduling (appointment setting) and countdown timer with UV lamp/lighting interlock for operator safety
- Intelligent constant-wind-speed technology using high-performance anemometric sensors that automatically adjust blower output to maintain target air velocities as HEPA filters load over time
- Front window sash limit protection that suspends fan operation if the sash is raised beyond safe working height; 10-degree ergonomic tilt angle on the front viewing window reduces operator fatigue during extended procedures
- HEPA filtration rated at $\geq 99.995\%$ for particles $\geq 0.3 \mu\text{m}$ (ISO Class 5); optional ULPA upgrade achieving $\geq 99.9995\%$ (ISO Class 4) for higher-risk applications
- Preset filter integrity alarm and filter failure/damage detection; low-energy standby mode for reduced operational costs during idle periods

- All-SUS304 stainless steel interior chamber walls for chemical resistance and ease of decontamination; removable SUS304 brushed stainless steel work surface for thorough cleaning and autoclave sterilization
- Standard splash-proof (IP-rated) AC power outlet inside the cabinet for in-cabinet equipment; reserved plumbing ports for water and gas service connections
- Modular split-style design; detachable base stand with lockable casters and leveling adjustment screw rods for stable placement on uneven laboratory floors

THEORY & METHOD

Theory and Method of Operation

The ToronSafeCab™ S operates as a Class II Type A2 biological safety cabinet, combining three distinct airflow streams to achieve simultaneous personnel, product, and environmental protection. When the cabinet is in operation, room air is drawn inward through the front opening at a controlled inflow velocity of 0.55 m/s, creating a negative-pressure air curtain at the sash that prevents aerosols from escaping into the laboratory — this is the personnel protection mechanism.

Inside the cabinet, a centrifugal blower recirculates approximately 70% of the work zone air downward through a supply HEPA filter at 0.35 m/s, producing a vertical laminar downflow that protects the sample from cross-contamination and airborne particulates — this is the product protection mechanism. The remaining 30% of work zone air is exhausted through a dedicated exhaust HEPA filter, preventing any accumulation of volatile chemicals or biological agents — this constitutes environmental protection.

Both the supply and exhaust HEPA filters retain $\geq 99.995\%$ of particles $\geq 0.3 \mu\text{m}$ (ISO Class 5). An optional ULPA filter upgrade achieves $\geq 99.9995\%$ retention (ISO Class 4). The intelligent constant-wind-speed system continuously monitors airflow via high-performance sensors, automatically compensating for filter loading to maintain target velocities throughout the filter's service life. A programmable UV germicidal lamp with scheduling and countdown functions provides additional surface decontamination between sessions.

TECHNICAL SPECIFICATIONS

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Technical Specifications

Parameter	ToronSafeCab™ S-1	ToronSafeCab™ 13S-2	ToronSafeCab™ 16S-2
Applicable Persons	1	2	
Cleanliness Class	ISO Class 5 / Class 100		
Inflow Air Velocity	0.55 m/s		
Downflow Air Velocity	0.35 m/s		
Noise Level	≤ 67 dB(A)		
Vibration Half Peak Value	≤ 5 μm		
Illuminance	≥ 650 Lux		
Ambient Temperature	10 – 30 °C		
Relative Humidity (at 25°C)	≤ 70%		
Atmospheric Pressure	80 – 105 kPa		
Internal Dimensions (W×D×H)	900×580×595 mm	1360×580×595 mm	1680×580×595 mm
Housing Dimensions (W×D×H)	1040×770×2135 mm	1500×770×2135 mm	1820×770×2135 mm
Height of Rack	630 mm		
Inflow HEPA Dimensions	935×475×70 mm	1395×475×70 mm	1715×475×70 mm
Exhaust HEPA Dimensions	450×420×90 mm	750×420×90 mm	1000×420×70 mm

Parameter	ToronSafeCab™ S-1	ToronSafeCab™ 13S-2	ToronSafeCab™ 16S-2
Lamp (Power × Qty)	20 W × 1	30 W × 1	
UV Light (Power × Qty)	20 W × 1	30 W × 1	40 W × 1
Total Power Consumption	1,100 W	1,400 W	1,450 W
Voltage	220 V ± 10%, 50/60 Hz (110V is also available)		
Net Weight	174 kg	223 kg	280 kg
Gross Weight	205 kg	253 kg	322 kg
Package Size	1300×970×1690 mm	1760×970×1690 mm	2080×970×1690 mm



Torontech Inc.

251 Consumers Road, Suite 1200
Toronto, Ontario, M2J 4R3, Canada 

Phone: +1 416 368 2721 | Fax: +1 416 981 7652
Email: info@torontech.com

Torontech, LLC

601 Brickell Key Drive, Suite 700
Miami, FL 33131, USA 

Toll-Free: 1-866-383-7919
Email: sales@torontech.com

Torontech ME FZE

Meydan Grandstand, 6th Floor,
Meydan Road, Nad Al Sheba,
Dubai-261440, UAE 

Phone: +971 488 19252
Email: me@torontech.com

