

ESCO
HEALTHCARE



Cytoculture®

Cytotoxic Safety Cabinet-Australia

**The Premium Solution for
Cytotoxic Drug Processing**





Cytoculture



Main Features

Sentinel™ Microprocessor controller supervises all functions.

- Meets the requirements of the Australian Standard AS 2252.5 for Cytotoxic Drug Safety Cabinet.
- Provides you with the highest level of operator safety to protect you and your personnel from the hazardous compounds used in cytotoxic drugs.

Motorized sash helps simplify transfer of materials into the work zone.

- Highest level of cleanliness within the work zone for patient safety and product cleanliness.

Esco **ISOCIDE™** antimicrobial coating on all painted surfaces.

Dual long-life filters for supply and exhaust airflow.

Additional V-bank exhaust filter.

- Spacious knee room maximizes operator comfort, 245mm (9.6") inward
- Available in 1.2 and 1.8 m models (4' and 6').



Introduction

The Esco Cytoculture® Cytotoxic Safety Cabinet-Australia is the premium solution for cytotoxic/antineoplastic drug processing, providing the highest level of patient, pharmacist and environmental protection. This revolutionary product builds on Esco's experience of more than 20 years as a global leader in biological safety containment technology.

The unique demands of handling and preparing cytotoxic drugs for use in chemotherapy require a specialized cabinet. As cytotoxic drugs cannot be inactivated by chemical decontamination, Class II biosafety cabinets should not be used. With this in mind Esco has developed a highly specialized range of cabinets designed especially for handling these potentially dangerous drugs.

*Esco Cytoculture Cytotoxic Safety Cabinet-Australia, Model CYT-4K...
When used as a Class II biological safety cabinet, the Cytoculture meets the requirements of the Australian Standard AS 2252.5 for Cytotoxic Drug Safety Cabinet and offers an added level of safety and personnel protection by permitting a filter change without decontamination.*

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Touchpad data entry buttons permit control settings and access to diagnostics, default settings and hierarchical menus.

Color coded indicator lamps display green for primary function (fan operation); blue for secondary function (LED lights and electrical outlet); and orange for caution (UV lamp ON).

Programmable automatic UV light timer simplifies operation, enhances contamination control, extends UV lamp life and saves energy.

A graphical interface indicates cabinet performance.

Digital read-out with alpha-numeric display indicates all input, status and alarm functions.

All functions can be user activated through touch-pad programming access; see Operations Manual.



Sentinel™ Microprocessor Control System, Programmable

- When programmed ON
- the start-up sequence confirms status with Air Safe and local time display.
- the Personal Identification Number (PIN) access restricts unauthorized adjustments.
- an airflow alarm warns of deviations from normal velocities.

With a range of specialist features incorporated into our Cytoculture® Cytotoxic Safety Cabinets-Australia (CYT-K), Esco brings you the ideal solution for your cytotoxic drug preparation challenges. The CYT cabinets are designed to:

- Maintain the highest level of cleanliness within the work zone ensuring the best possible level of patient safety and product cleanliness.
- Provide the highest level of operator safety to protect you and your personnel from hazardous compounds used in cytotoxic drugs.
- Incorporate an advanced range of additional safety features, including a specialized Tri-Filter™ design, to guarantee the highest possible levels of environmental, operator and product protection. Contaminated air from the work zone is immediately filtered by a HEPA filter below the work zone to minimize the possibility of airborne contamination.
- Meet the requirements of all relevant safety standards for handling cytotoxic drugs (see technical specifications for details).
- Proven Air Barrier Test in accordance with Australian Standard A 1807.22 -Determination of air barrier containment of laminar flow safety cabinets.

With an additional filter placed directly below the work zone, filters on our CYT-K cabinets can be changed without exposing

the ambient environment and service personnel to potential hazards. This unique design allows contaminated filters to be removed easily, and all contaminated areas to be sterilized without compromising safety.

Designed and Built for Enhanced Usability

All Esco Cytotoxic Safety Cabinets-Australia are ergonomically designed for a high level of usability and efficiency. They incorporate a number of features to ensure operator comfort and enhance productivity.

- The ergonomic angled front improves reach into the work zone and prevents glare off the sliding sash.
- The aesthetically pleasing stainless steel interior will never rust, chip or generate particles, enhancing operator and product protection.
- The interior back and side walls are fabricated from a single piece of stainless steel, with no joints or sharp corners. This makes the cabinet exceptionally easy to clean.
- Built-in warm white, electronically ballasted, 5000K lighting provides excellent illumination of the work zone to reduce operator fatigue. The reliable lighting system is zero-flicker and instant start.
- The front sliding sash window is motorized for movement, facilitating easy transfer of reagents and equipment in and out of the work zone.

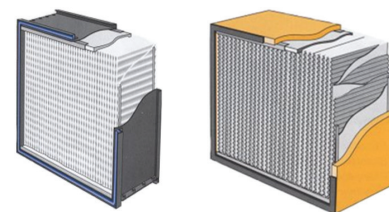
- Spacious leg room is provided for the operator in a sitting position, ensuring comfort during use.
- The easily removable multi-piece stainless steel work surface construction increases cleanliness.

Enhanced Filtration System

The enhanced filtration system is designed to provide the highest level of air quality within the work zone.

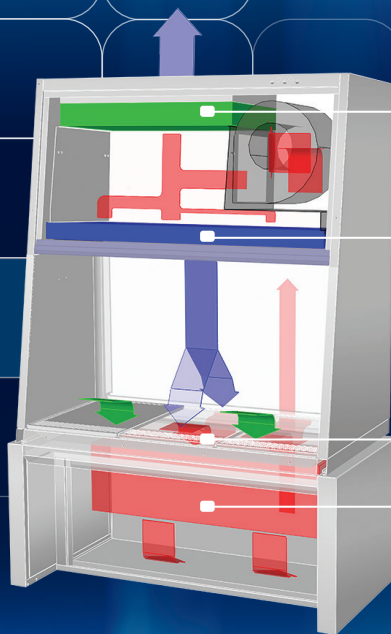
- Esco CYT-K cabinets provide ISO Class 3 air cleanliness within the work zone (as per ISO 14644-1), significantly "cleaner" than the usual Class 5 classification on cabinets offered by the competition.
- A highly specialized Tri-Filter design incorporates two standard second stage exhaust and supply filter and an additional V-bank exhaust filter, providing a world class level of air cleanliness to protect the operator, the product and the environment.

Mini-pleat Separatorless Filter (left) vs. Conventional Aluminium Separator Filter (right)



Esco cabinets use Swedish Camfil Farr® mini-pleat filters without aluminum separators to increase filter efficiency, minimize the chance of leakage, and to prolong filter life. Filters include a lightweight aluminum frame for structural stability and elimination of swelling common to conventional wood frames.

Cytoculture Cytotoxic Safety Cabinet Airflow



- Secondary Exhaust filter
- Supply filter
- Dynamic air barrier, inflow and forward directed downflow air converge
- Primary Exhaust filter

- Air enters the cabinet through perforations located along the front of the work zone before mixing with used downflow air in a common chamber below the work zone (this inflow air does not mix with the filtered downflow air in the cabinet's main chamber). The mixed air then passes through the filter located beneath the work zone.
- The HEPA filtered air then passes through internal ducting in the back wall of the cabinet to a common air plenum where ~30% is exhausted through the ULPA

- ULPA-filtered air
- Unfiltered / potentially contaminated air
- Room air / Inflow air

filter/carbon filter exhaust filter and ~70% is forced evenly through the ULPA supply filter. This sterilized air then passes through the main chamber as downflow air, flushing all contaminants from the work zone.

- At the work surface the downflow airstream splits and enters the common air chamber beneath the work zone through perforations located at the front and back of the main chamber, from where the cycle is repeated.

- Advanced minipleat separatorless filter technology maximizes surface area. This energy efficient design reduces operating costs, extends filter life, and delivers increased laminar air-flow uniformity, ensuring better product protection than conventional filters.
- The high quality ULPA filters (per IEST-RP-CC001.3) operate at typical efficiency of >99.999% at 0.1 to 0.3 micron sizes, providing superior product protection.
- For enhanced safety the first exhaust filter can be changed easily without time consuming decontamination.
- An integral metal filter guard protects the ULPA filters from accidental damage.
- Unique U-channels in work surface construction protect the main filters from liquid spills and small parts.

User-Friendly Control System

The user-friendly Esco Sentinel™ Microprocessor-based control system,

fitted to the CYT-K cabinets, supervises the operation of all cabinet functions. The controls are easily configurable to meet your requirements and comes equipped with a number of enhanced features to promote cabinet usability and safety.

- All critical cabinet airflow parameters can be monitored using the built-in accurate true airflow velocity sensing technology. Temperature compensated sensors ensure increased accuracy.
- Audible and visual alarms ensure product protection by alerting the user in the event of low airflow.
- Password-protected administration can be set to restrict access to the main menu ensuring that the cabinet cannot be operated by unauthorized personnel.
- Built-in solid state variable speed controllers, with integral RFI and noise filters, are superior to conventional "step" controllers and offer infinite adjustment from zero to maximum setting.

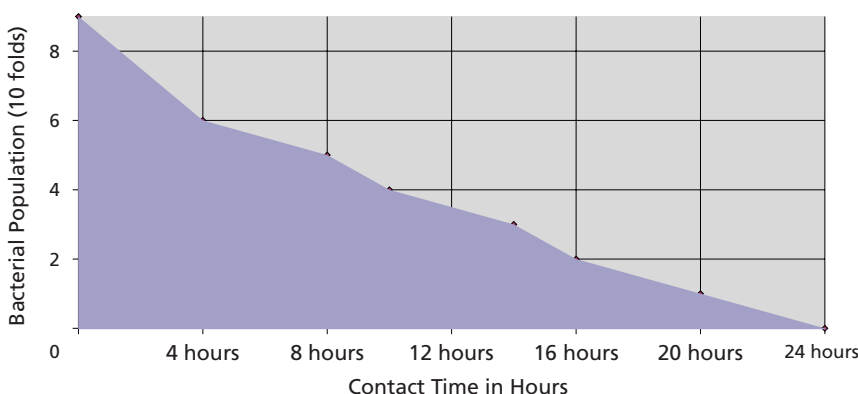
Cabinet Construction

All Esco products are manufactured to the highest quality, using the finest materials, for the most demanding laboratory applications.

- All components are designed for maximum chemical resistance and enhanced durability for a long service life, making Esco's CYT-K cabinets one of the most cost-effective solutions in the market.
- The main body of the cabinet is constructed of industrial-grade electrogalvanized steel for durability and enhanced safety.
- All cabinet components are cleanroom compatible.
- The external structure of all our cabinets is coated with Esco Isocide antimicrobial coating to protect against contamination and inhibit bacterial growth. Isocide™ eliminates 99.9% of surface bacteria within 24 hours of exposure to further ensure the cleanliness of the work zone.

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ISOCIDE™ Antimicrobial Powder-Coating

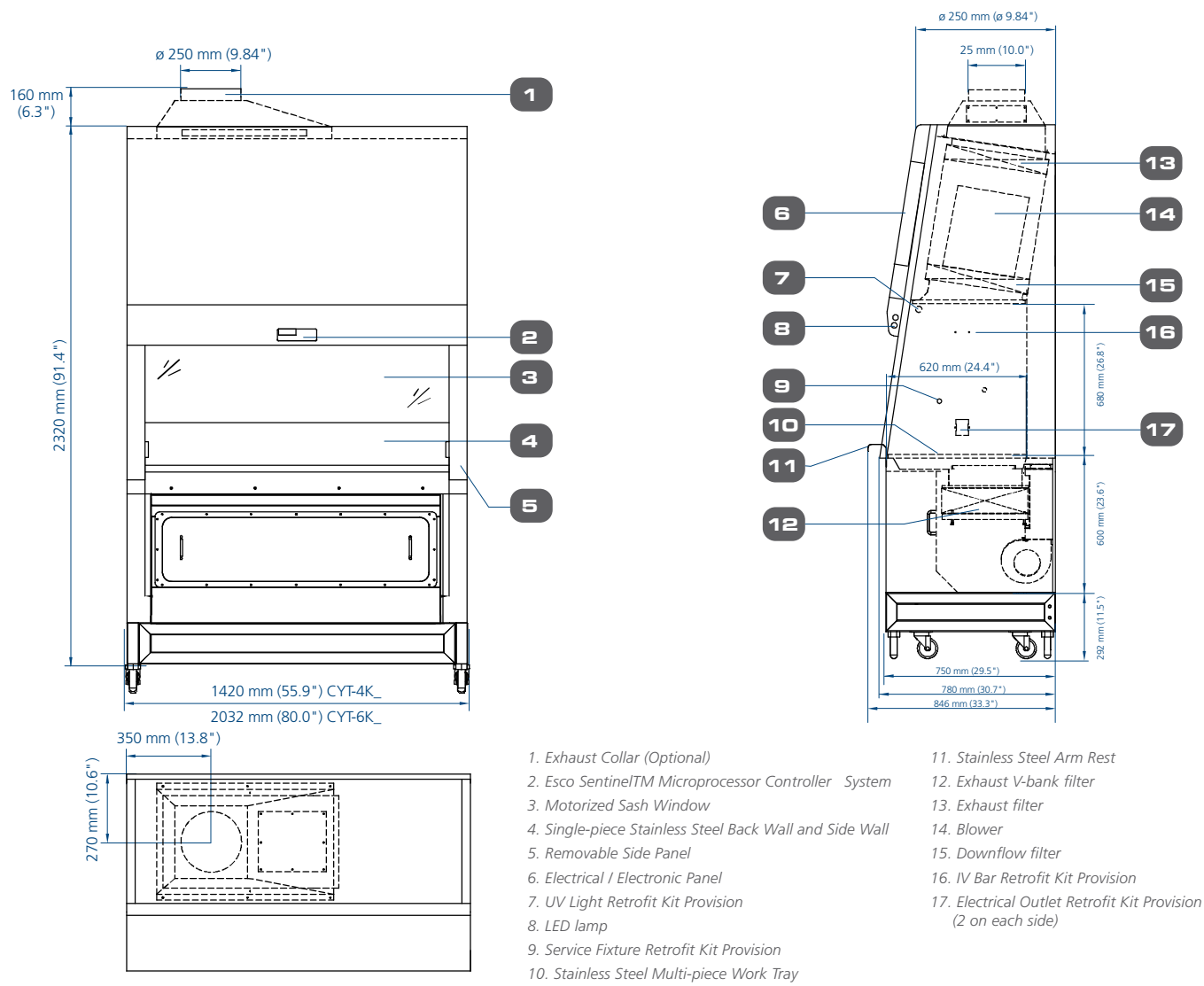


All exterior painted surfaces are powder-coated with Esco Isocide, an antimicrobial inhibitor to diminish contamination. Isocide™ is integrated into the coating substrate and cannot wash out or diminished by repeated cleaning. Performance results are available upon request. Contact Esco or your Esco Sales Representative for details.

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Model CYT-K Cytotoxic Safety Cabinet-Australia Technical Specifications Engineering Drawing



Standards Compliance	General Requirements	Air Quality	Filtration	Electrical Safety
	AS 2252.5 standard	ISO 14644.1, Class 3, Worldwide IEST-G-CC1001, Worldwide IEST-G-CC1002, Worldwide	EN-1822 (H14), Europe IEST-RP-CC001.3, USA	IEC61010-1, International

Blower Efficiency

- Esco Cytotoxic Safety Cabinet-Australia incorporate permanently lubricated direct drive centrifugal blowers. The energy efficient external rotor motor design reduces operating costs and has extremely low vibration.
- The blower system automatically maintains airflow as the filters become loaded, ensuring optimum efficiency and product protection without the need for constant manual adjustment.

Designed and Built to Exceed Safety Criteria

At Esco safety is of paramount importance. We take extra care in the design and construction of all cabinets to ensure all

components used in our products meet or exceed all applicable safety requirements.

- Each cabinet is tested individually in the factory tested for safety and performance, in accordance with international standards. Each unit is shipped with a documentation outlining the tests undertaken, and the units individual results for each cabinet.
- All electrical components are UL listed or UL recognized, ensuring superior electrical safety for the operator.

Warranty

Esco Cytotoxic Safety cabinets-Australia include an extended 3 year warranty, excluding consumable parts and accessories. Contact your local Sales

Representative for specific warranty details.

Customized to Meet Your Specific Needs

Esco CYT cabinets can be configured to meet unique needs including:

- Lead shielding for nuclear medicine applications.
- An optional carbon filter impregnated with KI (potassium iodide) in place of the additional HEPA filter (this configuration does not protect service technicians when changing contaminated filters).

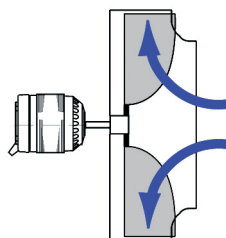
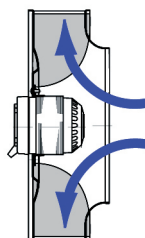
General Specifications, Cytotoxic Safety Cabinets

Model		CYT-4K1	CYT-6K1
Nominal Size		1.2 meters (4')	1.8 meters (6')
External Dimensions (W x D x H)		1420 x 846 x 2320 mm (55.9" x 33.3" x 86.2")	2032 x 846 x 2320 mm (80.0" x 33.3" x 86.2")
Internal Work Area, Dimensions (W x D x H)		1264 x 620 x 670 mm (29.7" x 24.4" x 26.4")	1874 x 620 x 670 mm (73.8" x 24.4" x 26.4")
Internal Work Area, Space		0.60 m ² (6.4 sq.ft.)	0.90 m ² (9.7 sq.ft.)
Average Airflow Velocity	Inflow	0.55 m/s (108 fpm) - 0.90 m/s (177 fpm)	
	Downflow	0.30m/s (59.fpm) - 0.45 m/s (88.5 fpm)	
Exhaust Volume with Thimble Duct	CBV Exhaust Volume	611 m ³ / h (360 cfm)	931 m ³ / h (548 cfm)
	Static Pressure at CBV Exhaust Volume	39 Pa / 0.15 in H ₂ O	63 Pa / 0.25 in H ₂ O
Filter Typical Efficiency		>99.999% at 0.1 to 0.3 micron, ULPA as per IEST-RP-CC001.3 USA >99.999% at MPPS, H14 as per EN 1822 EU	
LED Light Intensity At Zero Ambient		>1375 Lux (>128 foot candles)	>1270 Lux (>118 foot candles)
Cabinet Construction		1.5 mm (0.06") 16 gauge electrogalvanized steel with Isocide white oven-baked epoxy powder-coating	
Net Weight		414 kg (912 lbs)	621 kg (1369 lbs)
Shipping Weight		434 kg (957 lbs)	641 kg (1413 lbs)
Shipping Dimensions, Maximum (W x D x H)		1560 x 930 x 2220 mm (61.4" x 36.6" x 87.4")	2170 x 930 x 2230 mm (85.4" x 36.6" x 87.8")

* Additional voltages may be available; contact Esco for ordering information.

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Esco Centrifugal Fan with External Rotor Motor (left) vs. Conventional Fan with Standard Motor (right)



- Esco cabinets use German made **ebm-papst®** permanently lubricated, centrifugal motor/blowers with external rotor designs.
- Integrated blades narrow the profile and eliminate need for a motor shaft.
- Motors are selected for energy efficiency, compact design, and flat profile. The completely integrated assembly optimizes motor cooling.
- All rotating parts are unitized and balanced for smooth, quiet, vibration-free operation.

Comprehensive Performance Testing At Esco



Every Cytoculture CYT-K model manufactured by Esco is individually tested, documented by serial number and validated with the following test methods.

- Inflow / downflow velocity
- PAO aerosol challenge for filter integrity
- Airflow pattern visualization
- Electrical safety to IEC61010-1
- Additional KI-Discus containment and microbiological testing is performed on statistical sampling basis.

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Options and Accessories

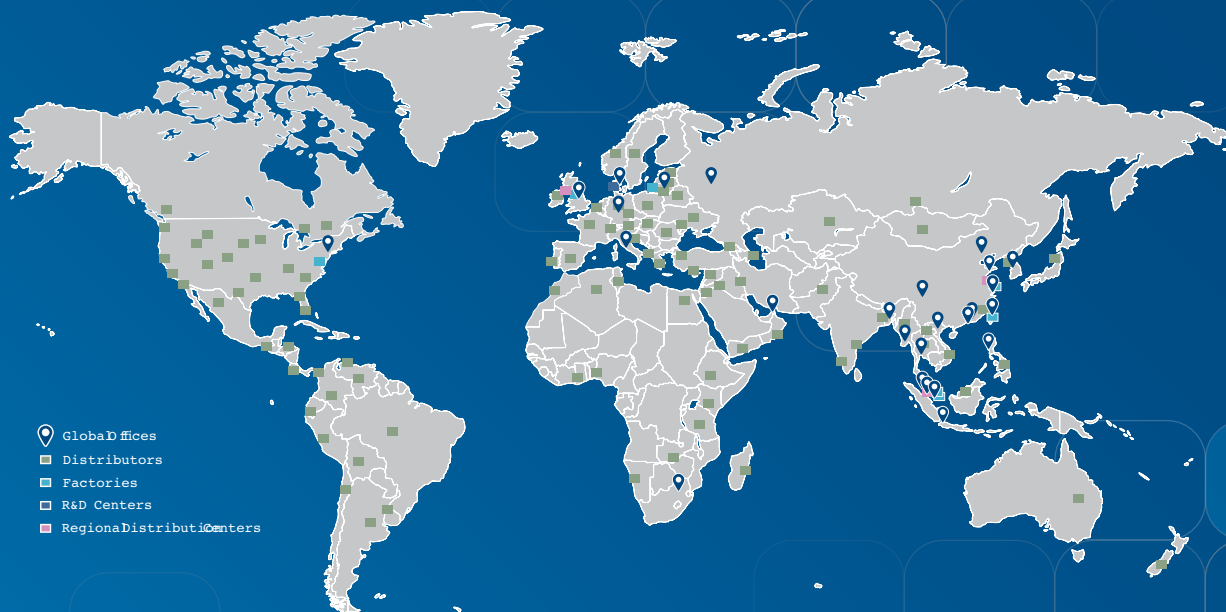


Option to Single Tray work zone



Customize to Lead-shielded CYT

ESCO LIFESCIENCES GROUP NETWORK 42 Locations in 21 Countries All Over the World



- Global Offices
- Distributors
- Factories
- R&D Centers
- Regional Distribution Centers



Air Shower
Aseptic Containment Isolator (ACTI)
Ceiling Laminar Airflow Units
Cleanroom Transfer Hatch
Containment Barrier Isolator (CBI)
Downflow Booth (DFB)
Dynamic Floor Laminar Hatch
Dynamic Pass Box
Evidence Drying Cabinet
Garment Storage Cabinet
General Processing Platform Isolator (GPPI)
Laminar Flow Horizontal Trolley
Laminar Flow Straddle Units, Single and Double
Laminar Flow Vertical Trolley
Pass Box
Soft Wall Cleanroom
Sputum Booth
Ventilated Balance Enclosure (VBE)
Weighing and Dispensing Containment Isolator (WDCI)

Since 1978, Esco has emerged as a leader in the development of controlled environment, laboratory and pharmaceutical equipment solutions. Products sold in more than 100 countries include biological safety cabinets, fume hoods, ductless fume hoods, laminar flow clean benches, animal containment workstations, cytotoxic cabinets, hospital pharmacy isolators, and PCR cabinets and instrumentation. With the most extensive product line in the industry, Esco has passed more tests, in more languages, for more certifications, throughout more countries than any biosafety cabinet manufacturer in the world. Esco remains dedicated to delivering innovative solutions for the clinical, life science, research and industrial laboratory community.

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