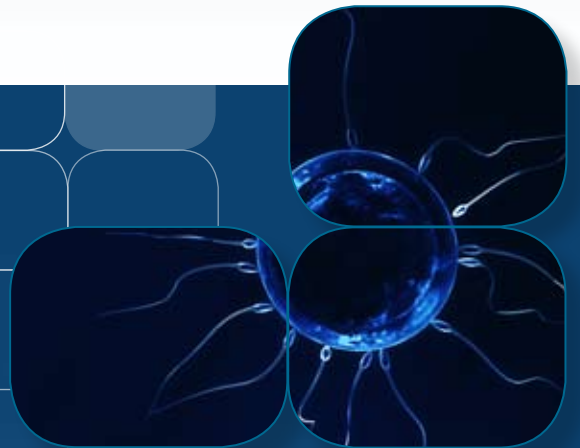


Labculture®



*Esco IVF Workstation, Model IVF-4A.  
Shown with optional support stand.*

## ***In Vitro* Fertilization Workstation**



**ESCO**  
WORLD CLASS. WORLDWIDE.



Esco IVF Workstation, Model IVF-4A\_ shown with optional support stand.

## Introduction

The Labculture IVF workstation is specially designed for use in fertility laboratories for research work in the fields of human and animal reproduction. A controlled work environment is of high priority due to the complexity of the process. This includes hygienic conditions to minimise microbial contamination, a warmed work surface for the sustenance of biological matter and provisions for the use of microscopes.

In the Labculture IVF workstation, air is taken in from above the workstation and passed through an ULPA filter. The filtered air is then passed through the main chamber in a vertical laminar (unidirectional) air stream before being exhausted through the front opening.



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### Designed for Enhanced Usability

The Labculture IVF workstation incorporates a number of features to ensure operator comfort and enhanced productivity.

- The workstation interior is constructed of stainless steel, making the work zone easy to clean. The interior surface will not chip, rust or generate particles.
- The ergonomically designed work surface with a curved front edge is designed for maximum operator comfort.
- Built-in warm white, electronically ballasted, 5000k lighting provides excellent illumination of the work zone and reduces operator fatigue. The reliable lighting system is zero-flicker and instant start.
- The removable perforated filter diffuser provides protection to the filter and improves airflow uniformity.

### User-Friendly Control System

The Esco Sentinel microprocessor-based control system supervises all workstation functions. The controls are easily configurable to meet user requirements and come equipped with a number of enhanced features.

- Accurate true airflow velocity sensing technology measures all critical work-

station airflow parameters allowing superior monitoring. Temperature compensated sensors ensure increased accuracy.

- Built-in solid state variable speed controllers, is superior to conventional "step" controllers and offer infinite adjustment from zero to maximum setting.
- Password-protected administration can be set to restrict access to the main menu.
- Audible and visual alarms ensure product protection by alerting the user in the event of low airflow.
- A bright, easy-to-read, LCD display provides continuous monitoring of workstation airflow.
- The intelligent blower system automatically adjusts to maintain airflow as the filter becomes loaded with particulates, eliminating the need for constant adjustment and ensuring optimum performance and product protection.
- The work surface temperature is adjustable.

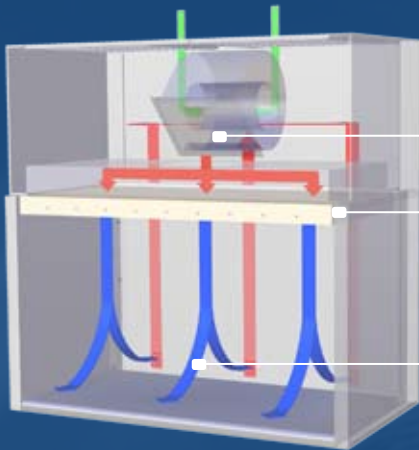
### Enhanced Filtration System

The enhanced filtration system on IVF workstation is designed to provide the highest level of air quality within the work

zone, meeting all relevant standards (see technical specifications for details).

- Esco IVF workstation provides ISO Class 3 air cleanliness within the work zone as per ISO 14644.1, significantly cleaner than the usual Class 5 classification on workstations offered by the competition.
- High quality ULPA filters use an improved mini-pleat separation technique to maximize surface area, improve efficiency and extend the life of the filter. Filters operate at a typical efficiency of >99.999% at 0.1 to 0.3 micron sizes, providing superior product protection over conventional HEPA filters.
- An additional disposable pre-filter traps large particles in the inflow air prior to reaching the main filter, protecting it against damage and prolonging its life.
- Auto-Purge™ slots at the back of the work zone recirculate air back into the blower plenum, minimizing turbulence, eliminating dead air zones, prolonging main filter life and enhancing product and cross-contamination protection.

## IVF Workstations



- Blower
- Supply ULPA Filter
- Vertical Laminar Flow of Clean Air

- Room air is taken from the top of the cabinet through a disposable pre-filter with 85% arrestance, trapping larger particles and prolonging the life of the main filter.
- Air is forced evenly through a ULPA filter resulting in a stream of clean, vertical, laminar air within the main chamber with a velocity of 0.475 m/s (95 fpm), flushing all contaminants from the work zone.

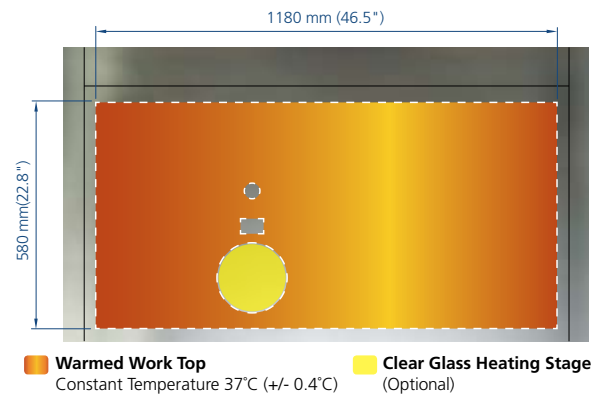
- ULPA-filtered air
- Unfiltered / potentially contaminated air
- Room air / Inflow air

- The purified air travels across the work zone in a vertical (unidirectional) stream and is exhausted through the entire open front of the cabinet and through Auto-Purge slots in the back wall. The Auto-Purge slots are designed to eliminate air turbulence and dead-air corners in the work zone. In addition, the Auto-Purge Slots prolong the filter life.

## Heating Options

A warmed work surface is necessary to prevent thermal shock during IVF/ART (Assisted Reproductive Technique) procedures for human and animal reproduction. Esco IVF Workstation meets the requirement by having the warmed work top maintaining at the optimal temperature ( $37^{\circ}\text{C} \pm 0.4^{\circ}\text{C} / 32.7^{\circ}\text{F}$ ). Work top temperature is constantly being displayed on the front panel.

Beneath the stainless steel worktop, there is an integrated heating system which maintain the temperature of the work surface at  $37^{\circ}\text{C}$  ( $98.6^{\circ}\text{F}$ ). Customized warming patterns is also available to suit the workspace of the operator so as to ensure greatest efficiency.



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## Microscope

Oocyte pick-up, embryo handling and micromanipulation require various types of microscopes. Most common models of stereo zoom microscopes, transmitted light sources and inverted microscopes can be integrated into Esco IVF Workstations.

Different types of microscopes used for various IVF applications:

- Upright microscope - sperm vitality tests and ova collections.
- Inverted microscope - use with micro-manipulator for processes such as IXCI, IMSI.
- Stereo microscope - ova selection, pre-treatment of ova by means of IVF techniques and for manipulation.

Esco supplies all common microscope brands and models. However, microscopes already in use and microscopes purchased separately can be installed onto Esco IVF Workstations.

If you have an existing microscope or preferred model, please contact Esco and provide us with details.

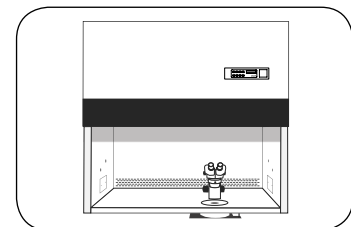
### Esco's Solution

Esco's integrated solution includes:

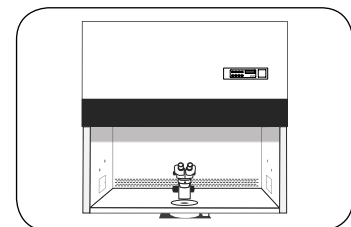
- 1 Provision of user specified microscope(s).
- 2 Factory integration of microscope(s) with workstation.
- 3 For stereoscopes, provision of integrated microscope light source mounted below the workstation's work surface
4. For all microscopes, OPTIONAL clear glass heated light stage\* is available, which ensures more accurate and reliable thermal control of specimens during observation under the microscope
5. Verification of ergonomics to ensure ease of access to the microscope eye pieces at the front of the workstation
6. Complete factory testing to ensure workstation airflows and product protection are not compromised

\* Warming Blocks must not be used on the heated glass stage. This will damage the heated glass stage.

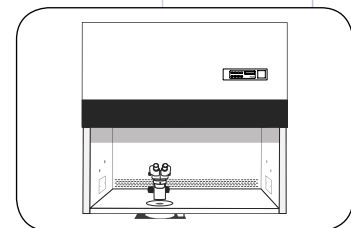
### Microscope Placing Options



Microscope placing: **right side**



Microscope placing: **center**



Microscope placing: **left side**

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# Esco IVF Workstations

## Provide Sample Protection

### Pre-Filters

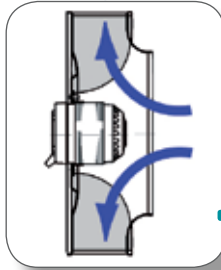
An additional disposable pre-filter traps large particles in the inflow air prior to reaching the main filter, protecting against damage and prolonging filter life.

### High Performance Fan System

German made ebm-papst® permanently lubricated, centrifugal motor/blowers with external rotor designs.

Motors selected for energy efficiency, compact design, and flat profile. Completely integrated assembly optimizes motor cooling.

All rotating parts balanced for smooth, quiet, vibration-free operation.



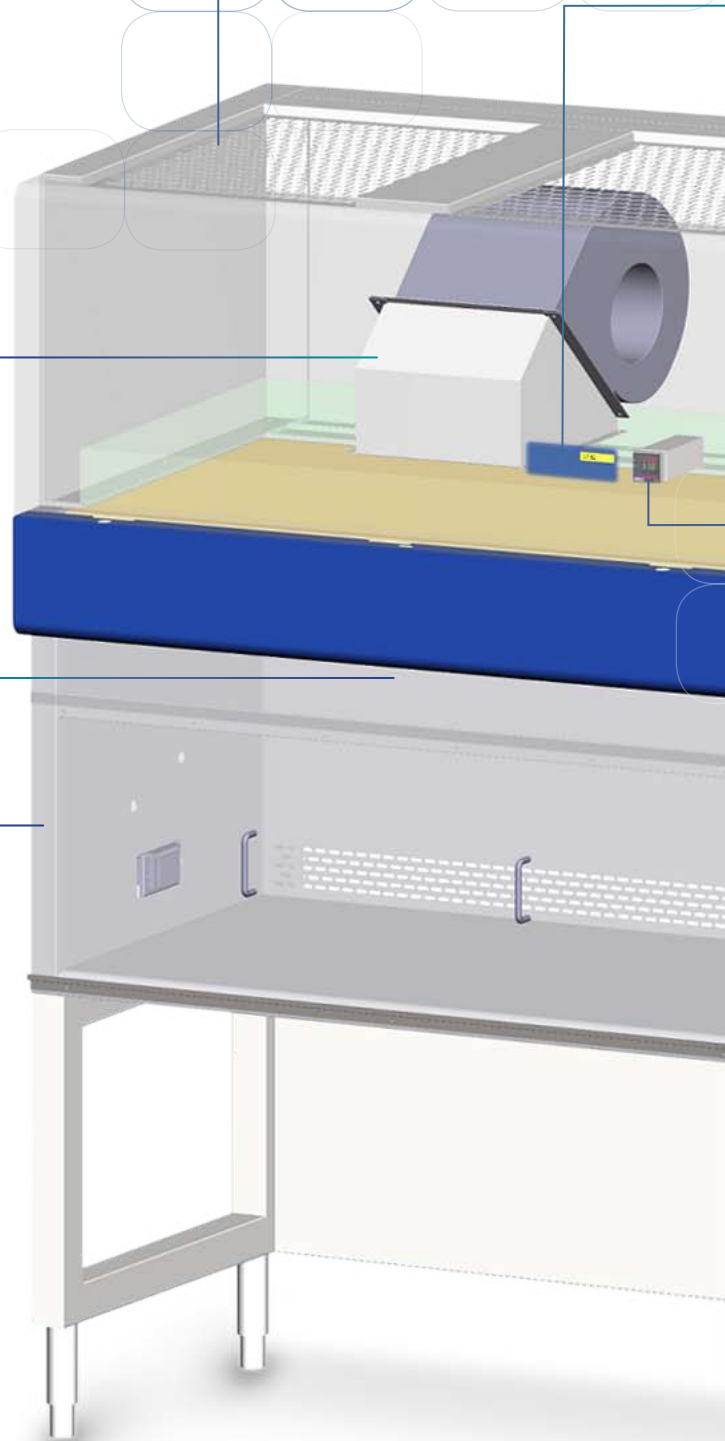
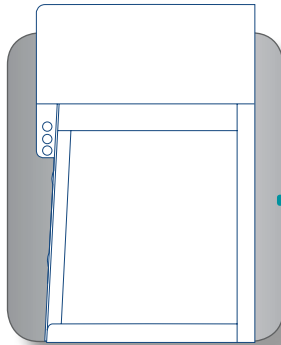
### ULPA Filtration System

ULPA filters operate at a typical efficiency of >99.999% at 0.1 to 0.3 micron sizes, providing superior product protection over conventional HEPA filters.



### User Interface

An angled front, rounded work surface front edge, and glass sides promote ergonomics. The powder coated work zone rear wall eliminates harsh reflections which may be associated with conventional stainless steel interiors. The vertical air flow design minimizes direct airflow which may lead to dry eyes and fatigue.



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Esco IVF Workstation, Model IVF-4A\_ with optional support stand

### Air Cleanliness Standards

(ISO 14644-1, Air Cleanliness Particle Limits)  
(No. of Particles / m<sup>3</sup>)

Particle Size (µm)	Cleanliness Class					
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
0.1	10	100	1000	10000	100000	1000000
0.2	2	24	237	2370	23700	237000
0.3	-	10	102	1020	10200	102000
0.5	-	4	35	352	35200	35200
1.0	-	-	8	83	835	8320
5.0	-	-	-	-	29	293

### Superior Air Cleanliness

Esco cabinets provide ISO Class 3 air cleanliness within the work zone as per ISO 14644.1, significantly cleaner than the usual Class 4 classification offered by the competition.

## Other Features

- The workstation interior is constructed of stainless steel, making the work zone easy to clean. The interior surface will not chip, rust or generate particles.
- Built-in warm white, electronic ballasted, 5000k lighting provides excellent illumination of the work zone and reduces operator fatigue. The reliable lighting system is zero-flicker and instant start.
- IVF Workstation has low noise level of 59.5 dBA to ensure the comfort of the operator.
- All Esco products are manufactured for the most demanding laboratory applications.
- All components are designed for maximum chemical resistance and enhanced durability for a long service life.
- The main body of the workstation is constructed of industrial-grade electrogalvanized steel.
- All workstation components are cleanroom compatible.
- An optional stereo microscope, inverted microscope and transmitted light source can be build onto the IVF workstation.
- An optional built in LCD display which can be connected to microscope with a camera.
- An optional removable warming block. Easily accessible to reduce the need for frequent movement of sensitive samples.



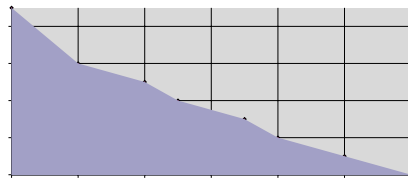
### Sentinel Silver™ Microprocessor Control, Alarm System

Advanced microprocessor control supervises operation of all hood functions. Temperature-compensated air velocity sensor monitors airflow. 24-hour clock and blower run hour meter, are standard.



### Temperature Display

Work surface temperature is constantly monitored on the front panel using 7 segment display.



### Built-In Protection

External surfaces are powder coated with Esco **ISOCIDE™** to eliminate 99.9% of surface bacteria within 24 hours of exposure.

Standards Compliance	Workstation Performance	Air Quality	Filtration	Electrical Safety
	AS 1386.5, Australia IEST-RP-CC002.2, Worldwide	ISO 14644.1, Class 4, Worldwide IEST-G-CC1001, Worldwide IEST-G-CC1002, Worldwide	EN-1822 (H14), Europe IEST-RP-CC001.3, Worldwide IEST-RP-CC007.1, Worldwide IEST-RP-CC034.1, Worldwide	IEC 61010-1 CSA C22.2, No. 61010-1, Canada EN 61010-1, Europe UL 61010-1, USA

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## General Specifications, IVF Workstations

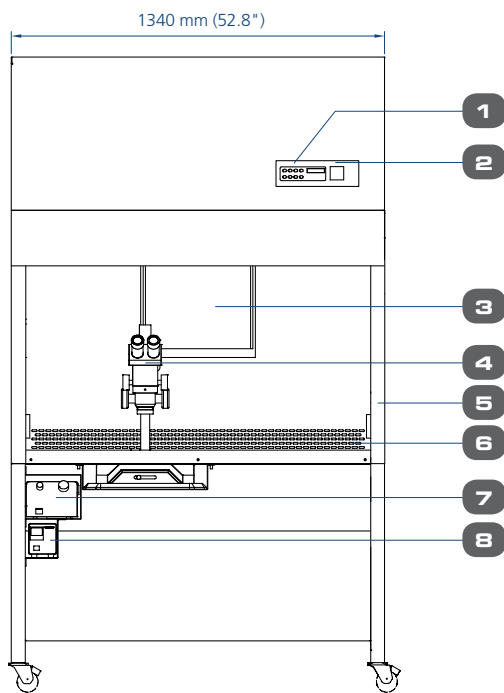
Note to customer: Insert electrical voltage number into last model number digits \_ when ordering

Model		IVF-4A_		
External Dimensions (W x D x H)		1340 x 800 x 1450 mm ( 52.8" x 31.5" x 57.0" )		
Internal Work Area (W x D x H)		1240 x 645 x 750 mm ( 48.8" x 25.4" x 29.5" )		
Air Volume (At Initial Velocity)		1036 cmh / 609 cfm		
Laminar Airflow Velocity		Average of 0.36 m/s or 70 fpm (+/-10%)		
Filter Efficiency		Minimum: 99.9991% at 0.3µm / 99.9985% at 0.12µm / 99.9982% at MPPS Typical: 99.9998% at 0.3µm / 99.9998% at 0.12µm / 99.9997% at MPPS		
Pre-Filter		Disposable and non-washable polyester fibers with 85% arrestance / EU3 rated		
Sound Emission*		59.5 dBA		
Fluorescent Lamp Intensity At Zero Ambient		>950 lux (>88 foot candles)		
Workstation Construction	Main Body	1.2 ~ 1.5mm / 0.05" ~ 0.06" / 16 gauge electro-galvanised steel with white oven-baked epoxy-polyester powder coated finish		
	Work Zone	1.2mm / 0.05" / 18 gauge stainless steel grade 304		
Electrical	Model	IVF-4A1	IVF-4A2	IVF-4A3
	Voltages	220-240 V, AC, 50Hz, 1Ø	110-120 V, AC, 60Hz, 1Ø	220-240 V, AC, 60Hz, 1Ø
	Cabinet Power / Amp	2210 W / 9.7 A	TBA	2210 W / 9.7 A
	Outlet Max. Amp	5 A	5 A	5 A
	Full Load Amps	14.7 A	TBA	14.7 A
	BTU / Hr	4508	TBA	4508
Net Weight (Approximate)		160 kg (352 lbs)		
Shipping Weight**		280 kg (616 lbs)		
Shipping Dimensions, Maximum (W x D x H)**		1500 x 950 x 1980 mm (59.0" x 37.4" x 78.0" )		
Shipping Volume, Maximum**		2.82 cbm (99.8 cu.ft)		

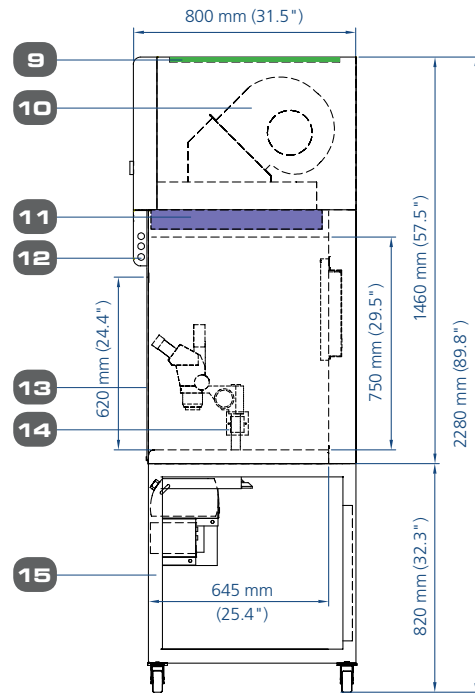
6

\* Noise reading in open field condition/ anechoic chamber.  
\*\* Workstation only; excludes optional stand.

## Model IVF - In Vitro Fertilization Workstation Technical Specifications



1. Esco Sentinel™ microprocessor control system
2. Temperature controller with display
3. LCD display monitor (optional)
4. Stereomicroscopes (optional)
5. Stainless steel side wall
6. Stainless steel work surface
7. Cold light source controller (optional)
8. Glass heating stage controller (optional)



9. Pre-filter
10. Blower
11. ULPA filter
12. Fluorescent light
13. Front cover (optional)
14. Electrical outlet retrofit kit provision
15. Customized support stand (optional)

## Options and Accessories for IVF Workstations

### Support Stands



#### Support Stand with Caster Wheels (SPC)

- Available in two standard heights: 711mm (28.0") - *seating* or 860mm (34.0") - *standing*
- Durable polyurethane caster wheels with 360 degree horizontal rotation
- Total brake system on front wheels
- Maximum weight supported: 600 kg (1323 lbs)



#### Support Stand with Leveling Feet (SAL)

- Available in two standard sizes: 711 mm (28.0") - *seating* or 860 mm (34.0") - *standing*
- Maximum weight supported: 500 kg (1,100 lbs)



#### Telescoping Support Stands with Leveling Feet (STL)

- Allow manual adjustment of the product height. The cabinet must be removed from a Telescoping Support Stand prior to adjustments
- Adjustable height range: 660-940 mm (26.0"-37.0"), adjustable in 25.4 mm (1.0") increments
- White oven-baked epoxy powder-coated finish
- Maximum weight supported: 600 kg (1323 lbs)



#### Telescoping Support Stands with Caster Wheels (STC)

- Allow manual adjustment of the product height. The cabinet must be removed from a Telescoping Support Stand prior to adjustments
- Adjustable height range: 660-960 mm (26.0"-37.8"), adjustable in 25.4 mm (1.0") increments
- White oven-baked epoxy powder-coated finish
- total brake system on front wheels
- Maximum weight supported: 600 kg (1323 lbs)



#### Hydraulic Motorized Adjustable Support Stand with Casters (SPM)

- Adjustable height range : 711-863 mm / (28.0"-34.0")
- Elevates to sitting or standing work surface height, Motorized electrically-adjustable
- Standard with caster wheels
- White oven-baked epoxy powder-coated finish
- Maximum weight supported: 500 kg (1100 lbs)

*Note: Increases exterior dimensions*

### Cabinet Accessories



#### LCD Display Monitor

- An optional built in LCD display which can be connected to microscope with a camera.



#### Ergonomic Foot Rest

- Angled, helps maintain proper posture
- Adjustable height
- Anti-skid coating, chemical resistant finish



#### PVC Armrest

- Chemically treated, improves operator comfort, easy to clean.

### Electrical Outlets



- Electrical outlet, ground fault, North America

*Note: 2ft, 3ft cabinets have 1 Retrofit Kit; 4ft, 5ft, 6ft cabinets have 2 Retrofit Kits.*



- Electrical outlet, Europe / Worldwide

*Note: 2ft, 3ft cabinets have 1 Retrofit Kit; 4ft, 5ft, 6ft cabinets have 2 Retrofit Kits.*



- Biological Safety Products
- Cleanroom Products
- Containment / Pharma Products
- Ductless Fume Hoods / Carbon Filtration
- General Purpose Scientific Equipment
- Industrial Lab Equipment
- In-Vitro Fertilization Products
- PCR Products
- Pharmacy Products
- Lab Animal Research Products
- Lab Thermostatics Products
- Lab Ventilation / Chemical Fume Products / Lab Furniture
- Powder Handling Products

*Since 1978, Esco has emerged as a leader in the development of controlled environment, laboratory and cleanroom equipment solutions. Products sold in more than 100 countries include biological safety cabinets, cleanroom products, compounding pharmacy equipment, containment / pharma products, ductless fume hoods, in vitro fertilization workstations, lab animal research products, laboratory fume hoods, laboratory ovens and incubators, laminar flow clean benches and PCR products 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. [www.escoglobal.com](http://www.escoglobal.com).*

Biological Safety Cabinets and Laminar Flow • Laboratory Fume Hoods • Laboratory Ovens  
 Laboratory Incubators • PCR Thermal Cyclers • Microplate Shaker/Incubators • Ultraflow Freezers

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