



*Airstream® Horizontal Laminar Flow  
Model: LHG-DS-F\_*

# Airstream®

## Horizontal Laminar Flow Cabinets

The Ultimate Energy Efficient, Quiet, and Easy to Clean  
Clean Benches. Ideal for Plant Tissue Culture





## Welcome to Esco

*Esco's Vision is to provide enabling technologies for scientific discoveries to make human lives healthier and safer.*



Esco represents innovation and forward-thinking designs, which are all coupled with the highest standard quality since 1978. The Esco Group of Companies remains dedicated in delivering innovative solutions for the clinical, life sciences, research, industrial, laboratory, pharmaceutical and IVF community. With the most extensive product line in the industry, our products have passed a number of international standards and certifications. Esco operates under ISO 9001, ISO 14001 and ISO 13485.

**Availability and Accessibility.** Headquartered in Singapore, manufacturing facilities are located in Asia and Europe. R&D is conducted worldwide spanning the US, Europe and Asia. Sales, services and marketing subsidiaries are located in 12 major markets including the US, UK, Japan, China and India. Our regional distribution centers are located in China, UK, India, Malaysia, Philippines, Singapore, South Africa, South Korea and United States of America. Because of our worldwide presence, you can be sure that Esco is within your reach.

**High Quality, Reliable and Dependable.** Our customers are confident that only with the best quality, reliable, and dependable products, can they be sure of the accuracy of their research and procedures. Cross functional teams from Esco Production, R&D, Quality Assurance and Senior Management, are regularly assembled to review and implement areas for improvement.

**Esco Cares for Your Safety.** Esco focuses on providing safety not just for your samples but also for users.

**Esco Cares for Your Comfort.** Comfort of our users is ensured by building ergonomic designs and by reducing the noise levels of the units.

**Esco Cares for the Environment.** One in every four of Esco's employees is involved in Research and Development and a number of these evaluate new components and/or designs to produce energy efficient equipment. Being GREEN is more than just modifying the parts we use to produce a new energy efficient technology, it also embodies the every aspect of the company.

**Customer Service and Support.** Our service does not stop once purchase has been made. Esco gives on-time customer service and offers end-user seminars, service training, preventive maintenance, provides educational materials and informative videos.

As Esco takes the opportunity to respond to the world's needs, we aim not just to contribute in the advancement of scientific discoveries but also in making the world a safer, healthier and a better place to live in.

# Airstream®

Laminar Flow Cabinets

# Products and Application

## Life Sciences Laboratory Equipment

### Sample Preparation

- Class I Biological Safety Cabinets
- Class II Type A2 Biological Safety Cabinets
- Class II Type B1 Biological Safety Cabinets
- Class II Type B2 Biological Safety Cabinets
- Class III Biological Safety Cabinets
- Horizontal Laminar Flow Clean Benches
- Vertical Laminar Flow Clean Benches
- Laboratory Animal Research Workstations
- Laboratory Centrifuges

### Sample Cultivation

- CO<sub>2</sub> Incubators, Direct Heat Air-Jacketed
- CO<sub>2</sub> Incubators with Cooling System
- CO<sub>2</sub> Incubators with Stainless Steel Exterior
- CO<sub>2</sub> Incubators (Water-Jacketed)
- Laboratory Shakers

### Sample Analysis

#### PCR Thermal Cyclers

- Conventional Thermal Cyclers
- Real-time PCR Systems

#### PCR Sample Handling

- Microplate Shakers
- PCR Cabinets

#### Sample Storage & Sample Protection Solutions

- Ultra-low Temperature Freezers
- Lab Refrigerators and Freezers
- Sample Database Management Software
- Intelligent Remote Monitoring Application Protocol
- Remote Monitoring, Datalogging, Programming Software
- Wireless Monitoring System

### Chemical Research

- Ductless Fume Hoods
- Laboratory Fume Hoods
- Fume Hood Airflow Monitors
- Exhaust Blowers
- Powder Weighing Balance Enclosures

### General Equipment

#### Laboratory Thermostatic Products

- Laboratory Oven
- Forced Convection Laboratory Incubator
- Natural Convection Laboratory Incubator
- Refrigerated Incubator

### Forensic Sciences

- Evidence Drying Cabinet

## Medical / IVF Equipment

### Controlled Embryo Handling

- Fertilisafe™ ART Workstation
- AVT-I Anti Vibration Table
- Semi Closed Environment IVF

### Safe Embryo Culture

- Miri® Multi room Benchtop Incubator
- CelCulture® CO<sub>2</sub> Incubator
- Mini Miri® Humidified Benchtop Incubator

### Innovative Time Lapse Imaging

- Miri® Time-lapse Incubator

### Accurate Quality Control

- Miri® GA Gas and Temperature Validation Unit
- Miri® GA Mini Gas Validation Unit

### Unique Consumables

- CultureCoin

## Healthcare

### Esco Pharma Products

#### Airflow Containment Products

- Pharmacon® Downflow Booths
- Ceiling Laminar Airflow Units
- Laminar Flow Horizontal/Vertical Trolley
- Enterprise™ Laminar Flow Straddle Unites
- Cytoculture™ Cytotoxic Safety Cabinets

#### Isolation Containment

- Aseptic Containment Isolator (ACTI)
- Weighing and Dispensing Containment Isolator (WDCI)
- General Processing Platform Isolator (GPPI)
- Containment Barrier Isolator (CBI)
- Turbulent Flow Aseptic (Grade A) Isolator (TFAI)
- Isoclean® Healthcare Platform Isolator (HPI)
- Streamline® Compounding Isolators (SCI)
- Technetium Dispensing Isolators
- Blood Cell Labeling Isolators
- Open and Closed Restricted Barrier Access Systems (RABS)

#### Cross Contamination Facility Integrated Barrier

- BioPass™ Pass Through
- Infinity® Air Shower Pass Box
- Cleanroom Air Shower
- Infinity® Cleanroom Transfer Hatch
- Infinity® Pass Box
- Soft capsule® Soft Wall Cleanroom
- Dynamic Passboxes and Dynamic Floor Label Hatches
- Laminar Flow Storage Cabinet

#### Ventilation Containment

- Ventilated Balance Enclosure

### VacciXcell Products

#### Bioreactors and Fermenters

- CelCradle™
- TideCell®
- VacciXcell™ Hybrid Bioreactor

#### Cell Culture Monitoring, Media and Consumables

- Super Plus™
- Plus™ Vero
- Plus™ MDCK
- Plus™ MDCK II
- BioNOC™ II macrocarriers
- GlucCell® Glucose Monitoring System
- CVD Kit

#### Filling Line Equipment

- Filling Line Isolators
- cRabs (close restricted access barriers)
- oRabs (open restricted access barriers)

#### Integrated Solutions

- Cell Processing Isolator
- Cell Processing Center

### TaPestle Rx Products and Services

#### PRODUCTS

##### Pharmacy Automation and Compounding Supply

- Compounding Pharmacy Isolators (SCI, HPI, CBI, GPPI)
- Safety Cabinets and Enclosures (Class II BSC, VBE, LFC)
- Radiopharmacy Hoods and Isolators
- Aseptic Filling Systems

##### Healthcare and Laboratory Construction Components

- Prefabricated Walls (Airecell®)
- Prefabricated Containerized Facility (Prefab™)
- Series Ceiling Systems
- Hygienic/Hermetic Door Systems
- Surgical Scrub Sinks
- Vinyl Tiles and Epoxy
- Laboratory Fit-outs
  - Worktops
  - Frames
  - Specialty Storage cabinets
  - Service Spines & Reagent Shelving

#### SERVICES

- Conceptualization
- Planning
- Procurement
- Installation

#### FACILITY DESIGNS

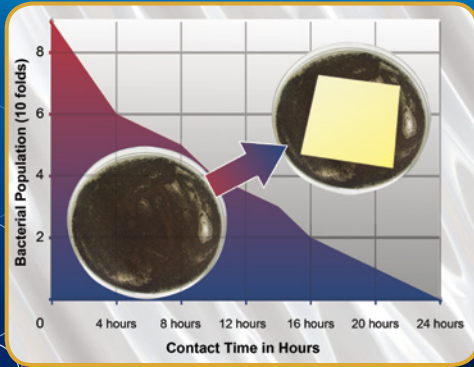
- Process Architecture
- Biocontainment/Biosafety
- Pharmacy Compounding/Nuclear Medicine
- Cleanroom, Vaccine and Cell Processing
- Laboratory
- Containerized Facility
- ART/IVF
- Cold Chain





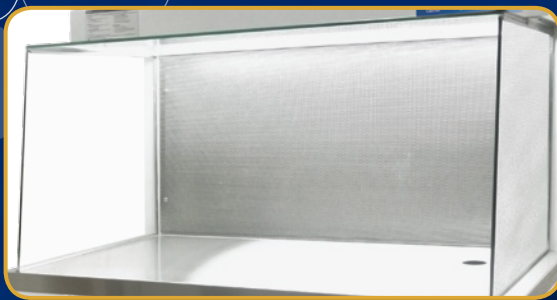
## Simple Switches Controller

- Easy to use and robust
- Pressure gauge to indicate filter load



## Isocide™ Powder Coat

- Silver-ion impregnated powder coat
- Inhibit microbial growth to improve safety



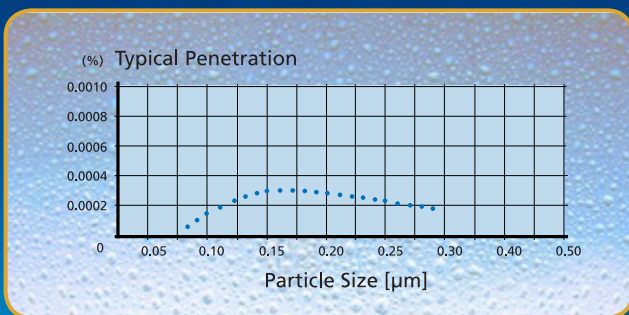
## Glass Enclosed Work Zone

- Comfortable unobstructed view
- No electrical outlets, service fixtures and IV bar holes, or gaps, to facilitate easy cleaning and prevent harboring contamination



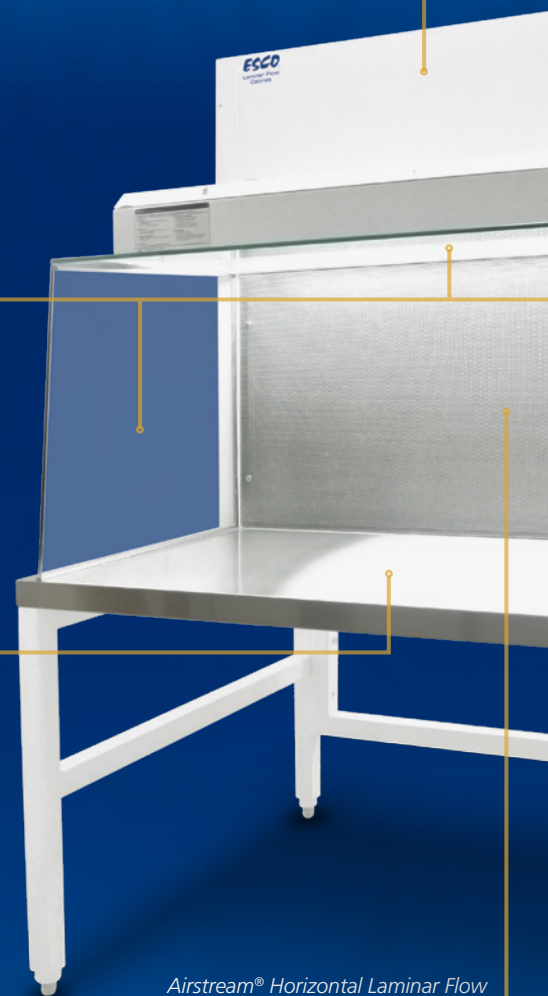
## Single Piece Tray

- Easy to clean
- Optional hole for glass bead sterilizer



## ULPA Filter

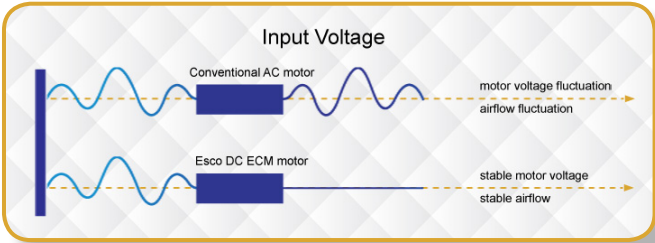
- 10x Filtration efficiency of HEPA filter  
Creates ISO Class 3 work zone instead of industry standard ISO Class 5
- 10x cleaner work zone than cabinets with HEPA filter



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# Energy-efficient DC ECM Motor

- 70% Energy savings from AC motor
- Stable airflow, despite building voltage fluctuations
- Night Setback to further reduce power consumption by 60%



## Designed to be the Ultimate Green and Serene

Plant Tissue Culture is one of the most promising branches of plant science, occupying key positions in plant biotechnology, plant breeding and plant propagation. Plant tissue culture, by definition, is the application of various techniques for the aseptic culture of plant cells, tissues, organs and their components under known physical and chemical conditions *in vitro*.

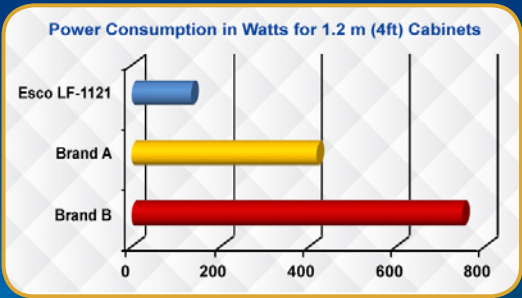
The remarkable success of the applications of plant tissue culture in plant biotechnology and plant science has led it to its significant roles in agriculture, forestry and horticulture. Several of its applications include large-scale micro-propagation, somatic embryogenesis and synthetic seed technology, genetic engineering of plants by gene transfer technology, and commercial production of plants.

Among the many concerns in plant tissue culture, the sensitivity of its samples to any source of contamination highly influences its success. A single bacterial cell or fungal spore can be fatal to a small plant piece since it can easily contaminate the growth media. It is essential to maintain a sterile environment as much as possible to avoid the contamination of samples, and this can be provided by the use of a laminar flow cabinet.

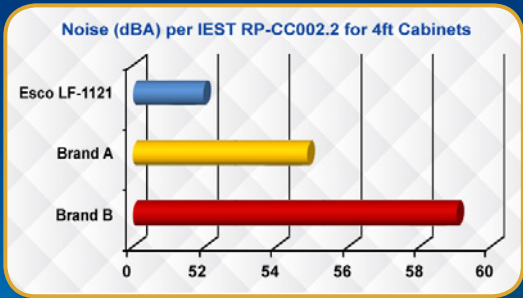
### The Role of Esco in Plant Tissue Culture

Since 1978, Esco has installed tens of thousands of laminar flow clean benches for the global life sciences market, providing reliable protection for samples and work processes of multitude of applications. Esco laminar flow clean benches are the premium selection for the discerning researcher, offering a combination of value, high quality construction, low operating noise levels and a wide product range.

Introducing Airstream® Horizontal Laminar Flow Cabinets, designed specifically for plant tissue culture. It offers a combination of smooth and easily cleanable work zone, easy-to-use features, superior filtration efficiency, and energy-efficient technology as part of Esco's advocacy to produce environment-friendly laboratory equipment. Experience quality protection. Experience innovation.



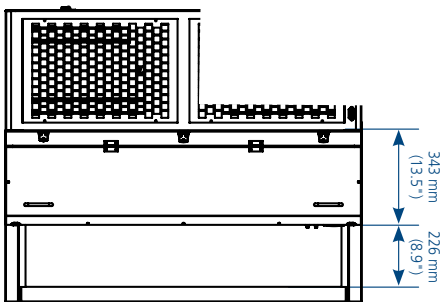
Green - Very Low Energy Consumption



Serene - One of the World's Quietest Laminar Flow Cabinet



# HORIZONTAL LAMINAR FLOW CABINET ENGINEERING DRAWING



1. Pressure Gauge

2. Operating Switches

3. Stainless Steel Diffuser

4. Stainless Steel Work Tray

5. Stainless Steel Tray

6. Support Stand
7. Pre-filter

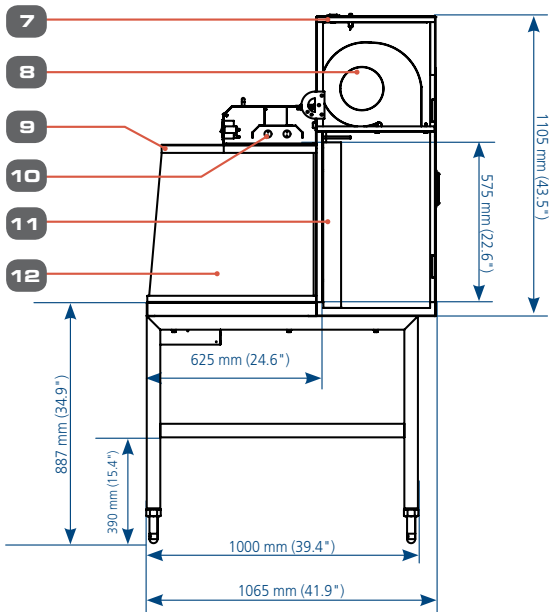
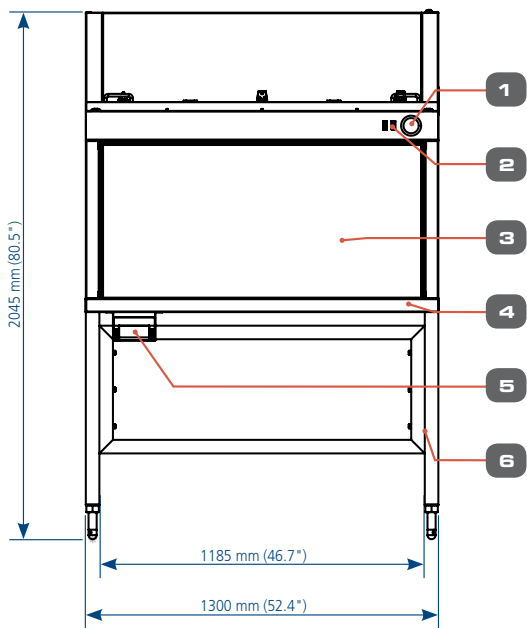
8. DC-ECM Blower

9. Tempered Glass Ceiling

10. T8 Fluorescent lamp

11. ULPA Filter

12. Tempered Glass Side Panel



Guide to Models, Horizontal Laminar Flow Cabinet

L H G - D S - F															
1st Placeholder Product Line		2nd Placeholder Flow		3rd Placeholder Side Wall		4th Placeholder Width		5th Placeholder Internal Width		6th Placeholder Control		7th Placeholder Window		8th Placeholder Electrical	
Laminar Flow	L	Horizontal	H	Glass	G	4 feet	4	3 ft. width, Glass ceiling construction	D	Simple Switches	S	Fixed	F	230 VAC, 50/60 Hz	8
															115 VAC, 50/60 Hz

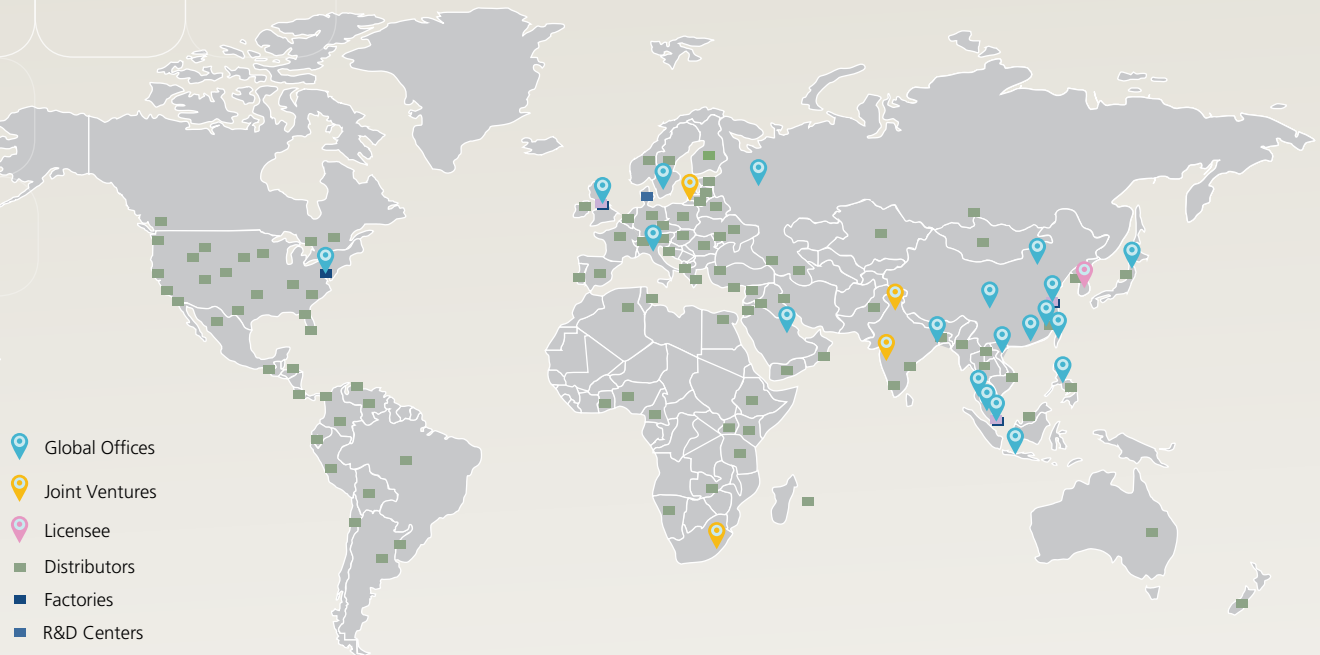
Example Code: LHG-4DS-F8  
Specifications: Laminar Flow Cabinet, Horizontal Flow, Glass sided walls, 4 ft. width, Simple Switches controller, Fixed window, and 230 VAC, 50/60 Hz








TECHNICAL SPECIFICATIONS		
Model	230 VAC 50/60 Hz	LHG-4DS-F8 (2120725)
	120 VAC 50/60 Hz	LHG-4DS-F8 (2120726)
Nominal Size		1.2 meter (4')
External Dimensions (W x D x H)		1300 x 1065 x 1105 mm (51.2" x 41.9" x 43.5")
Gross Internal Dimensions (W x D x H)		1185 x 625 x 575 mm (52.8" x 24.5 x 22.6")
Usable Work Area		0.74 m <sup>2</sup> (7.96 ft <sup>2</sup> )
Airflow		0.45 m/s (90 fpm)
ULPA 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
Sound Emission per IEST-RP-CC002.2 / NSF 49		52 dBA
Fluorescent Lamp Intensity (lux)		>1800 lux (>167 foot candles)
Cabinet Construction	Main body	1.2 mm (0.05") /18 gauge EG Steel With Isocide™ Oven-Baked Epoxy-Polyester Powder Coating
	Work Zone	Tray: 1.2 mm (0.08") / 18 gauge, SS 304, 4B Finish
	Side Walls	8 mm (0.3") UV Absorbing Tempered Glass
Electrical 230 VAC, 50/60 Hz	Cabinet Full Load Amps (FLA)	6
	Heat Load (BTU / Hr)	460
	Nominal Power Consumption	135 W
Electrical 120 VAC, 50/60 Hz	Cabinet Full Load Amps (FLA)	3.5
	Heat Load (BTU / Hr)	444
	Nominal Power Consumption	130 W
Net Weight *		200 Kg (441 lbs)
Shipping Weight *		250 Kg (551 lbs)
Shipping Dimensions, Maximum (W x D x H)*		1550 x 1300 x 1300 mm (45.3" x 51.2" x 51.2")
Shipping Volume, Maximum *		2.3 m <sup>3</sup> (81.2 ft <sup>3</sup> )

\*In open field condition



## ESCO GLOBAL NETWORK



-  Global Offices
-  Joint Ventures
-  Licensee
-  Distributors
-  Factories
-  R&D Centers
-  Regional Distribution Centers



ART Equipment  
 Biological Safety Cabinets  
 CO<sub>2</sub> Incubators  
 Compounding Pharmacy Equipment  
 Containment / Pharma Products  
 Ductless Fume Hoods  
 Freeze Dryers  
 Lab Animal Research Products  
 Laboratory Centrifuges  
 Laboratory Fume Hoods  
 Laboratory Ovens and Incubators  
 Laboratory Shakers  
 Laminar Flow Clean Benches  
 PCR Cabinets  
 PCR Thermal Cyclers  
 Powder Weighing Balance Enclosures  
 Ultra-low Temperature Freezers

*The Esco Group of Companies is a global life sciences tools provider with sales in over 100 countries. The group is active in lab equipment, pharma equipment and medical devices. Manufacturing facilities are located in Asia and Europe. R&D is conducted worldwide spanning the US, Europe and Asia. Sales, service and marketing subsidiaries are located in 12 major markets including the US, UK, Singapore, Japan, China and India. Regional distribution centers are located in the US, UK, and Singapore.*

Life Science • Chemical Research • Assisted Reproductive  
 Technology (ART) • Pharmaceutical Equipment • General Equipment

# ESCO

WORLD CLASS. WORLDWIDE.

Esco Micro Pte. Ltd. • 21 Changi South Street 1 • Singapore 486 777  
 Tel +65 6542 0833 • Fax +65 6542 6920 • mail@escoglobal.com  
 www.escoglobal.com

Esco Technologies, Inc. • 903 Sheehy Drive, Suite F, Horsham, PA 19044, USA  
 Tel 215-441-9661 • Fax 484-698-7757  
 eti.admin@escoglobal.com • www.escolifesciences.us

**Esco Global Offices:** Bangladesh | China | Denmark | Germany | Hong Kong | India | Indonesia | Italy | Japan | Lithuania  
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