



# Mining Industry





## Welcome to Esco

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

The Esco Lifesciences Group is committed to deliver innovative solutions for the clinical, life sciences, research, industrial, laboratory, pharmaceutical, and IVF community. With the most extensive product line in the industry, Esco have passed a number of international standards and certifications. Esco represents innovation and forward-thinking designs, that are of the highest standard quality since 1978.

**Availability and Accessibility.** Esco has headquarters in Singapore, Indonesia, and Philippines, with manufacturing facilities are located in Asia and Europe. Research and Development (R&D) is conducted worldwide spanning the US, Europe and Asia. Sales, services and marketing subsidiaries are located in 42 major markets including US, UK, Japan, China and India. Esco regional distribution centers are located in Singapore, Malaysia, Thailand, Vietnam, Myanmar, Indonesia, Philippines, Bangladesh, Hong Kong, Taiwan, South Korea, China, Japan, India, UAE, Central and South Africa, Denmark, Germany, Italy, Lithuania, Russia, United Kingdom, and USA. Because of our worldwide presence, you can be sure that Esco is within your reach.

**High Quality, Reliable, and Dependable.** Esco products are of high quality, reliable, and dependable; assuring customers of research accuracy. 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 you and the environment.

**Esco Cares for Your Comfort.** Building ergonomic designs and reducing noise levels of the units ensures comfort for our users.

**Esco Cares for the Environment.** One in every four of Esco's employees is involved in R&D and a number of them evaluate new components and/or designs to produce energy efficient equipment. Being GREEN is more than just modifying parts used to produce a new energy efficient technology, it is also embodied in the every aspect of the company.

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

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

## Mining Industry

## OVERVIEW

Mining and Metallurgy Industry is essential for living sustainably and the core for future technological advancements. With the substantial research and quality assurance processes, it will elevate personnel protection brought by hazards and will reduce environmental footprint.

Esco is a renowned leader when it comes to providing world class laboratory equipment that ensure in reducing risk, enhancing value, and maximizing return for the Mining and Metallurgy sector.

### Sample Preparation

- Laminar Flow Cabinet

### Chemical Analysis (QA/QC)

- Laboratory Fume Hood
- Ductless Fume Hood
- Filtered Storage Cabinet

### Sample Storage and Preservation

- Laboratory Refrigerator
- Laboratory Freezer

### General Equipment

- Laboratory Oven





LVG-4\_G-\_\_

# Airstream® Gen 3 Laminar Flow Clean Benches

## Features

- Energy saving DC ECM Blower
- ISOCIDE™ antimicrobial powder coating
- ULPA Filter with >99.999% efficiency at 0.1 – 0.3 µm
- Low noise
- Sentinel™ Gold Microprocessor Control System
- Recessed central work tray to contain spills
- Ergonomic design



UL 61010



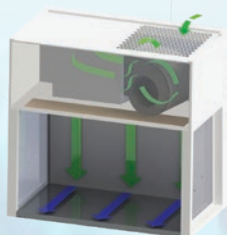
## Introduction

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 to suit all budgets from the industry leader. Laminar flow clean benches are used in applications where there is no generation of biohazardous materials, hence operator protection is not required.

## Basic Principle

### Airstream® Horizontal Laminar Flow Stainless Steel Side Wall Version

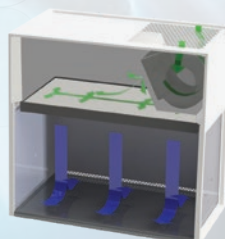
- Room air is taken in from the top of the clean bench through a disposable pre-filter with 85% arrestance; this serves to trap larger particles and increase the life of the main filter.
- Air is forced evenly across the ULPA/H14 filter(s); the result is a stream of clean laminar air within the workzone of the clean bench; this dilutes and flushes all airborne contaminants from the interior.
- A nominal filter face velocity of 0.45 m/s or 90 fpm ensures that there is a sufficient number of air changes within the enclosed area of the clean bench to maintain cleanliness.
- The purified air travels across the internal work zone of the clean bench in a horizontal, unidirectional stream and leaves the main work chamber across the entire open front of the clean bench.



■ ULPA-filtered air  
■ Room air / Inflow air

### Airstream® Vertical Laminar Flow Stainless Steel Side Wall Version

- Room air is taken in from the top of the clean bench through a disposable pre-filter with 85% arrestance; this serves to trap larger particles and increase the life of the main filter.
- Air is forced evenly across the ULPA/H14 filter(s); the result is a stream of clean laminar air within the workzone of the clean bench; this dilutes and flushes all airborne contaminants from the interior.
- A nominal filter face velocity of 0.45 m/s or 90 fpm ensures that there is a sufficient number of air changes within the enclosed area of the clean bench to maintain cleanliness.
- The purified air travels across the working zone of the clean bench in a vertical, unidirectional stream and leaves the main work chamber across the entire open front of the clean bench and through Auto-Purge™ slots at the back wall of the work zone which are designed to eliminate air turbulence and the possibility of dead air corners in the work zone.



■ ULPA-filtered air  
■ Room air / Inflow air

## Airstream® Gen 3 Laminar Flow Clean Benches

The Leading Solution for Research Laboratories

Esco Airstream® Laminar Flow Clean Benches are designed to provide superior product protection for your samples in research laboratories by preventing the entry of room and airborne contaminants. They are built with the latest laminar flow technology and innovation, and offers a wide range of options for user preferences.

### Horizontal Laminar Flow Clean Benches



LHG-4\_G-F\_

LHS-4\_G-F\_

### Vertical Laminar Flow Clean Benches



LVS-4\_G-S\_  
(Sliding Sash)

LVS-4\_G-F\_  
(Fixed Sash)

LVG-4\_G-F\_  
(Fixed Sash)

LVG-4\_G-S\_  
(Sliding Sash)

## OPTIONS AND ACCESSORIES



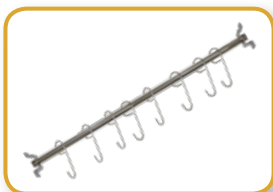
### Germicidal UV Lamp

- Emission of 253.7 nanometers for most efficient decontamination
- Lamp is positioned away from operator's line-of-sight for safety and proper exposure to interior surfaces



### Electrical Outlet

- European/ Worldwide Style, available in Type C, D, E, F, G, H, I
- North American style



### IV Bars with hooks

- Stainless steel construction, Max Load 6 Kg (13 lbs)
- Available for all standard Esco cabinets



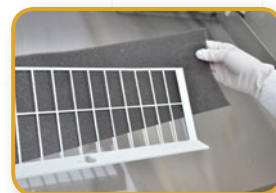
### PVC Arm Rest

- Chemically treated, improves operator comfort, easy to clean



### Support Stands

- Fixed height, with levelling feet or casters
- Telescoping height, with levelling feet or casters
- Electronic adjustable height, with levelling feet or casters



### Pre-filter

- Pre-filter on paper catch



EFA-M

# Frontier® Acela™ M Laboratory Fume Hoods

## Features

- Inner work depth is 100 mm deeper than conventional hoods
- Designed specifically for users in the mining industry
- Provides the highest level of containment and protection against highly corrosive chemicals at high temperature
- With ceramic worktop
- Has gas and water service fixtures

Available sizes: 4, 5, 6 and 8 ft



## Introduction

The Frontier® Acela™ M Series Fume Hood is designed specifically for users in the mining industry. It provides the highest level of protection and containment against highly corrosive chemicals at high temperatures.

## Optional Accessories:



Base Cabinet (EBA-M)



Circuit board protection



Service fixtures



Sentinel™ XL Airflow Alarm



Scrubber



Support Stand (ASL)



EFD-4A

# Frontier® DUO™ Laboratory Fume Hoods

## Features

- Dual wall design
- ASHRAE 110-2016 certified
- With black color phenolic resin worktop
- Has service fixtures added: 1 remote-controlled gas fixture and 1 swan-neck faucet
- Ergonomic 8° sloped front sash

Available sizes: 4, 5, 6 and 8 ft



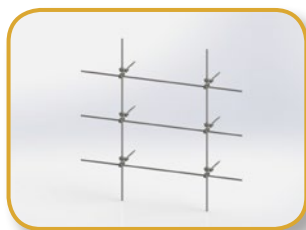
## Introduction

The Esco Frontier® Duo™ Fume Hood is an upgraded version of its predecessors representing design and engineering innovations that are at the forefront of fume hood technology. It has a rugged dual wall construction offering a much robust design that allows service fixtures and electrical outlets to be mounted on both sides of the wall.

## Optional Accessories:



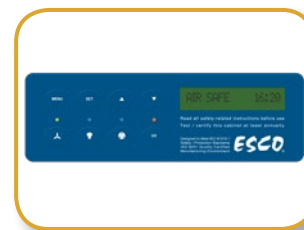
Base Cabinet (EBD)



Distillation grid



Service fixtures



Sentinel™ Silver  
Microprocessor  
(for EFD-B models)



ADC-B

# Ascent™ Ductless Fume Hoods

## Features

- **“GREEN” solution**
  - Environment-friendly
  - Does not discharge toxic gases to the environment
  - Saves energy, and reduces total carbon footprint
- **Safe carbon filtration**
  - Compliance to international standards
  - Optional VOC sensor system to detect filter saturation
  - FiltraCheck™ service to qualify your application’s suitability for a ductless solution
- **Low cost**
  - No ductwork required
  - No exhaust system required
- **Convenience**
  - No installation hassle and portable



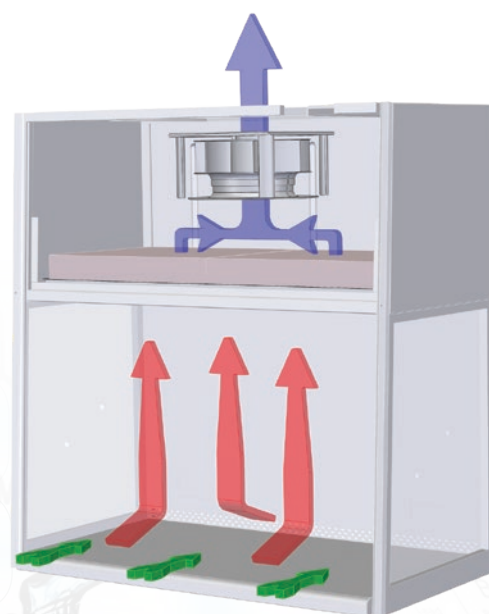
## Introduction

Esco Ascent™ Ductless Fume Hoods provide protection to both laboratory personnel and the environment from toxic fumes and are quickly becoming a viable alternative to conventional fume hoods. Unlike conventional fume hoods, these hoods filter out chemical fumes and recycle air directly back to the laboratory, providing energy savings, personnel and environmental protection, convenience as you do not have to deal with complicated ducting systems, and mobility, since ductless hoods are independent systems which do not require connection to extraction systems.

Available sizes: 3 ft, 4 ft, 5 ft, and 6 ft

## Cabinet Filtration System

- The inflow moves from the ambient environment into the work zone through the hood front opening with an average velocity of 0.4 m/s.
- Negative pressure is maintained within the main chamber of the hood to ensure that no chemical fumes or vapors escape the work zone.
- Air is taken through a pre-filter and activated carbon mounted in the interior of the hood. The carbon filter removes all fumes from the exhaust air stream and filtered clean air is exhausted directly back to the room.



Ascent™ Max Ductless Fume Hood, ADC Models

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



## OVERVIEW OF MODELS



### Ascent™ Max Series

Model: ADC-B-PP

- Main Filter: Carbon Filter
- Has an option for motorized sash
- Has provision for PP drip cup and swan-neck faucet
- Optional VOC sensor
- Available sizes: 2,3,4,5,6 ft.



### Ascent™ Max Series

Model: ADC-C  
(with Secondary Carbon Filter)

- Main Filter : Carbon Filter  
Secondary: Carbon Filter
- Optional VOC sensor
- Available sizes: 3,4,5,6 ft.



### Ascent™ Max Series

Model: ADC-E  
(with Secondary HEPA Filter)

- Main Filter : Carbon Filter  
Secondary Filter: HEPA filter
- Optional VOC sensor
- Available sizes: 3,4,5 ft.

## OPTIONS AND ACCESSORIES



Support Stand with  
Caster Wheels



Electrical Outlet



European Style  
Service Fixture



Support Stand with  
Leveling Feet



Swan-neck faucet



VOC Sensor



Base Cabinet



American Style  
Service Fixture



Carbon Filter



SPD-A

## Ascent™ Opti Series Ductless Fume Hoods

### Features

- Safe Carbon Filtration
- Acrylic construction
- Double Hinged mechanism sash
- Has ergonomic arm ports
- Portable and environment-friendly

Available sizes: 3 and 4 ft



### Introduction

Esco Ascent™ Opti Ductless Fume Cabinet is a full-featured ductless fume hood at cost-effective pricing. This equipment offers protection from toxic chemicals fumes. It is designed with ergonomic features, providing user comfort without compromising safety.

Also available in transparent back wall:



SPD-B



### Optional Accessories:



Mobile Cart



Carbon Filter

### Mining Industry



ASC\_

# Ascent™ Filtered Storage Cabinet

## Features

- ISOCIDE™ antimicrobial powder coating
- Sentinel™ microprocessor controller
- Door safety lock restricts access
- Multiple filter configurations

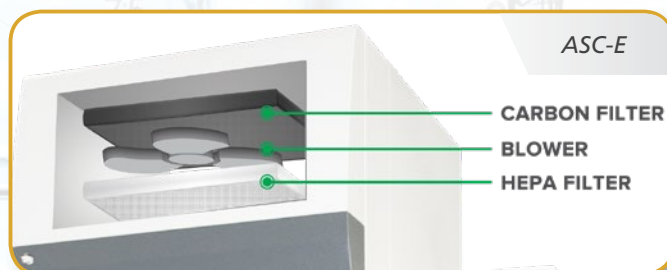
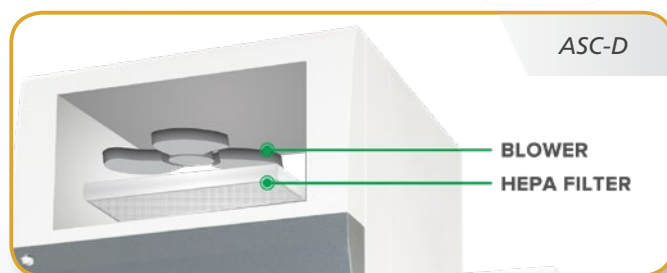
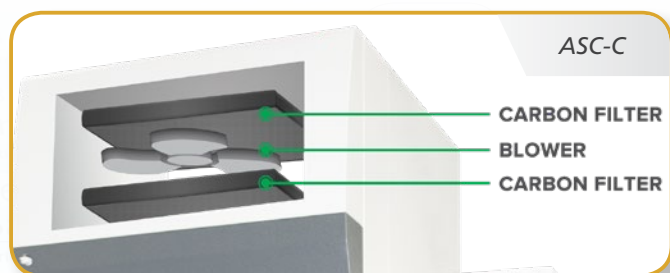
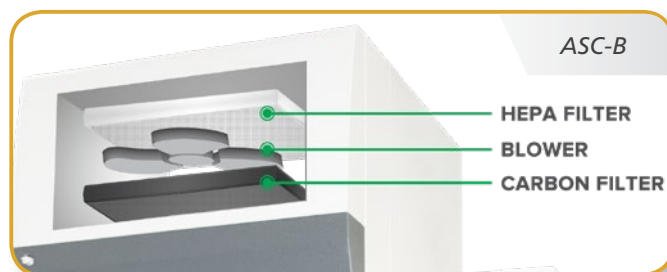
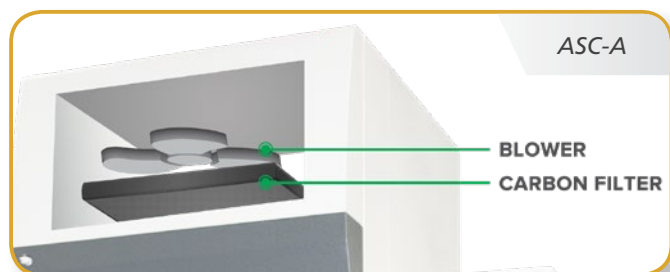
Available sizes: 2, 4 and 6 ft



## Introduction

Fumes from chemical containers often result to the storage cabinet's corrosion and contaminated air in the laboratory. Ascent™ storage cabinet is ideal in providing a safe and convenient storage solution. This cabinet is equipped with Nanocarb™ filters that effectively adsorb chemical fumes to provide operator and environment protection.

## Overview of Models:





# HP Series

## Laboratory Refrigerators and Freezers

### Features

- Forced-air design
- Intelligent automatic defrost
- Excellent temperature uniformity
- Door lock
- Triple-pane glass doors for refrigerators
- ISOCIDE™ antimicrobial powder coating
- High-quality stainless-steel interior for sample protection
- Internal LED lighting that saves up 70% power with less heat exposure
- Standard wheels for easy location or movement
- Audible and visual alarms

**ISOCIDE™**



### Introduction

Laboratory professionals invest time, money and hard work on irreplaceable samples. A cold storage equipment can store thousands to millions of dollars' worth of valuable products. Once proper storage requirements are not met, these precious samples may be put at risk and eventually lead to sample spoilage and wastage. That is why, it is important to carefully choose the cold storage that can assure optimal product protection.

Esco HP Series is designed for laboratory use offering superior product protection with long term reliability and exceptional product quality. When superior levels of cold storage performance, reliability, and flexibility are needed, the Esco HP series of Laboratory Refrigerators and Freezers is the best choice—it provides a high-performance protection for your precious samples! Laboratory Refrigerators are generally used for storing non-volatile reagents and non-volatile biological specimens.



HR1-140S-\_      HR1-400T-\_  
+2°C to +15°C

Laboratory Refrigerators



HF2-400T-\_      HF2-1500S-\_  
(HF2): -10°C to -25°C  
(HF3): -20°C to -40°C

Laboratory Freezers



HC6-400S-\_      HC6-700S-\_  
Refrigerator: +2°C to +15°C  
Freezer: -10°C to -24°C

Laboratory Combination Refrigerators and Freezers

### Mining Industry

## OPTIONS AND ACCESSORIES



### Shelf Kits (SK\_)

Atoxic, plastic-coated steel, supported by anti-tilt clips. It is for additional space inside your chamber where you can place your samples. It also provides a good support for your samples to prevent damage and maintain organization of samples.



### Drawer Kits (DK\_)

A drawer extractible on telescopic slides, adjustable in height, bottom made of painted steel, beehive structure type, supplied with adjustable dividers made of polypropylene, front is fitted with an ergonomic aluminum handle, for the storage of samples in a more convenient and organized way.



### Digital Monitor (DM\_)

An independent visual/acoustic alarm and recording system, with an accuracy of 0.1°C due to the PT100 probe used for temperature detection. It will take over alarm failures, together with standard rechargeable batteries that record event such as unauthorized personnel.



### Access Port (AP\_)

A 15 mm or 35 mm diameter hole that will be placed at the back of the unit, closed with a white plastic cap, used for the access of additional probes inside the chamber.



### Basket Kit (BK1)

Made of stainless steel that provides an anti-corrosion environment for your samples. It is mounted on anti-tilt side slides and can be glided outside the chamber for the purpose of easy access to samples.



### Chart Recorder

The chart recorder provides an easy-to-read graph of data vs time. It is a reliable, accurate, and stable instrument, for on-the-spot written documentation of chamber temperature.

Model	Item Code	Description
SK1	1330063	Shelf Kits for HR1-140, HF2-140 (Standard and Touchscreen models)
SK2	1330064	Shelf Kits for HR1-400, HF2-400 and HC6-400 (Standard and Touchscreen models)
SK3	1330065	Shelf Kits for HR1-700, HF2-700, HF3-700, HC6-700, HR1-1500 and HF2-1500 (Standard and Touchscreen models)
SK4	1330066	Shelf Kits for HF3-400 (Standard and Touchscreen models)
DK1	1330067	Drawer Kits for HR1-140, HF2-140 (Standard and Touchscreen models)
DK2	1330068	Drawer Kits for HF2-400, HR1-400 and HC6-400 (Standard and Touchscreen models)
DK3	1330069	Drawer Kits for HR1-1500, HF2-1500, HR1-700, HF2-700 and HC6 700 (Standard and Touchscreen models)
DK4	1330070	Drawer Kits for HF3-400 (Standard and Touchscreen models)
DK5	1330071	Drawer Kits for HF3-700 (Standard and Touchscreen models)
DM1	1330072	Digital Monitor for single chamber models for Touchscreen models only
DM2	1330073	Digital Monitor for dual chamber models for Touchscreen models only
AP15	1330074	15 mm Access Port for all models (Standard and Touchscreen models)
AP35	1330075	35 mm Access Port for all models (Standard and Touchscreen models)
BK1	1330076	Stainless Steel Basket Kit for HR1-700, HR1-1500, HF2-700, HF2-1500, HF3-700 and HC6-700S (Standard and Touchscreen models)
Backup Battery	1330127	Standard backup battery for acoustic and visual alarm during power failure (Standard and Touchscreen models)
4-20 mA	1330129	4-20 mA Output (Touchscreen models)
GSM	1330216	GSM Module (Touchscreen models)
Chart Recorder	1330185	Chart Recorder for all models (Standard and Touchscreen models)
IQQQ	9010179	Installation Qualification Operation Qualification for all models



OFA-110

# Isotherm®

## Forced Convection Laboratory Oven

### Features

- Ventiflow™ Ventilation System – Forced air convection design
- Pre-heat Chamber Technology – 4-zone heated air jacket
- SmartSense™ Microprocessor PID Control Technology
- ISOCIDE™ Antimicrobial Powder Coating
- Door Keylock
- Multiple Redundant Over-Temperature Protection System
- Superior Insulation

Available sizes: 32, 54, 110, 170, and 240 L

**ISOCIDE™**



CE

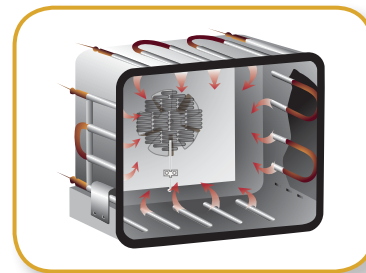
### Introduction

The Esco Isotherm® world class laboratory ovens are used for high-forced volume thermal convection applications such as drying and curing among many others. With ergonomic design, microprocessor PID controls, 4-zone heated air jacket and precisely tuned and tested ventilation and insulation package, Esco Isotherm® is your reliable oven for universal application.



#### Ventiflow™ Ventilation System

- Forced convection design produces faster temperature response rates, improves uniformity and reduces fluctuation
- Low energy consumption and low noise level



#### Pre-Heat Chamber Technology

- 4-zone heated air jacket ensures stable heating and maximum temperature uniformity in the chamber
- 2-point door seal and eccentric hinge ensures maximum gasket



#### Multiple redundant over-temperature protection system

- Over-all temperature protection meets DIN 12880 Class 3.1 standards
- All electrical components are UL recognized



#### SmartSense™ Microprocessor PID Control Technology

- Connected to an instrument-grade precision platinum temperature probe
- Ensures fast ramp time. Prevents overshoot and ensures stable temperature once set point is achieved

### Mining Industry

## OPTIONS AND ACCESSORIES (for Isotherm® products)



### Wall bracket (only for 32 L and 54 L chambers)

- Accommodates desired operating heights



### Reversed Door Swing (Factory-installed)



### Voyager® Software Kit

- Esco Voyager® is a PC-based software package developed for remote monitoring, datalogging and programming/device configuration of Esco controlled environment laboratory equipment



### Support stands fixed height at 720 mm (28.3")



### Additional Shelf

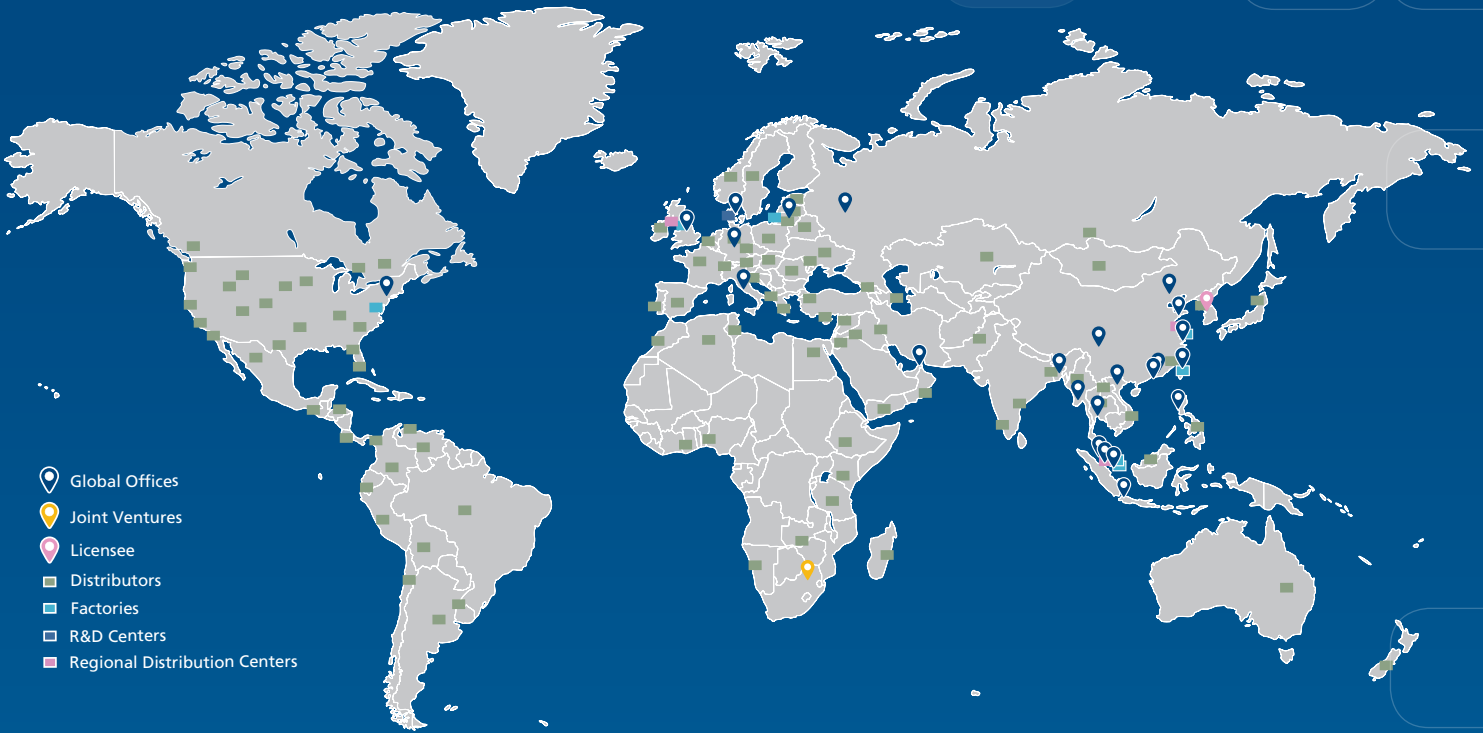
- Two shelves are included for 32 L, 54 L, 110 L, 170 L and 240 L models as standard. Additional shelves may be ordered.



### Optional Stainless Steel Exterior

- Robust construction and corrosion-resistant surface that meets pharmaceutical and clinical laboratory requirements

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