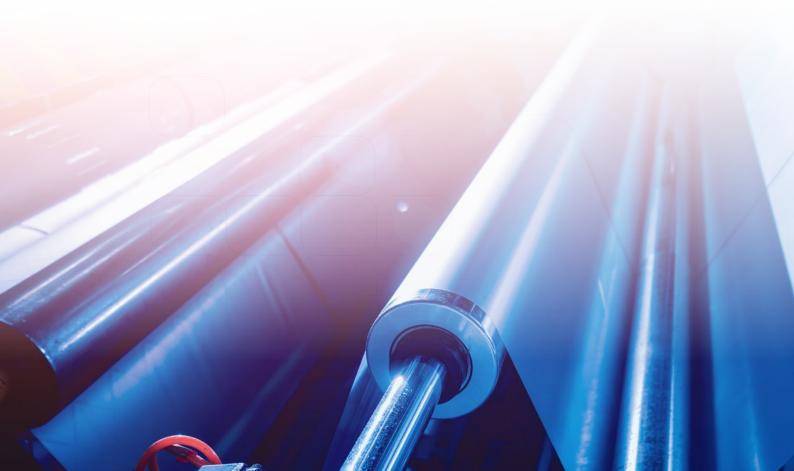






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OVERVIEW

One of the significant innovations of the past century has been the introduction and wide use of plastics for many applications. Most of these are derived from materials found in nature such as minerals, plants, coal, natural gas, and oil. Plastics have transformed numerous industries for various reasons as it includes the fact that they resist environmental degradation over time, are economical and widely available, and are produced with a wide variety of material properties. It also plays a vital role in the development, design, and manufacture of products that we use daily.

The Plastic industry manufactures resins, plastic materials (i.e. polymers), thermosets, thermoplastics, and synthetic rubber. One of the common applications performed is plastic injection molding with plastic articles like medical components, special plastic tubes, petri dishes, and pharmaceutical components requiring cleanroom conditions. Esco is an expert when it comes to providing cleanroom equipment and other controlled environment solutions.

In order to influence the plastics industry to operate in an environmentally responsible manner, Esco offers world-class laboratory equipment to ensure that plastic products make a positive contribution to people's safety and health, as well as the environment.

Applications

- Polymer Analysis
- Chemical Analysis
- Degradation Analysis

Chemical Analysis (QA/QC)

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

Sample Storage and Preservation

• Laboratory Refrigerator and Laboratory Freezer

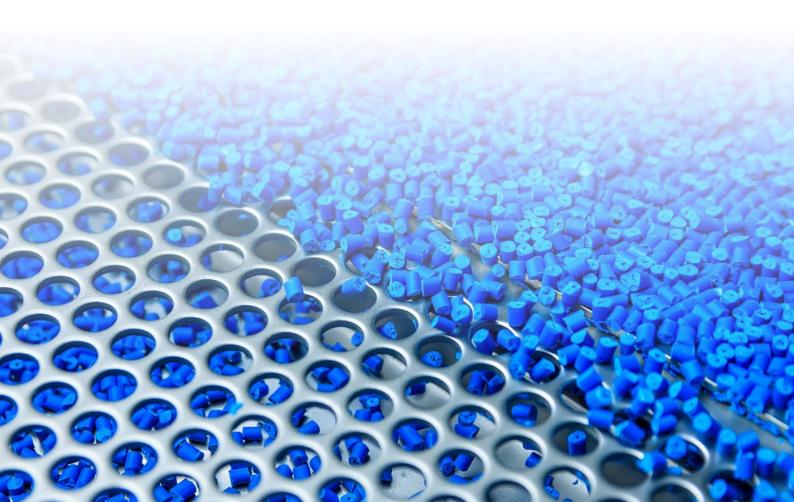
- Wet Chemistry Methods
- Physical, Durability and Thermal Testing
- Packaging Tests

Sample Cultivation/Incubation

• CO₂ Incubator

General Equipment

Laboratory Oven





Frontier® DUOTM 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







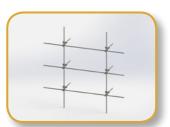
Introduction

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)



Frontier® ACELA™ **Laboratory Fume Hoods**

Features

- Tri-wall design
- ASHRAE 110-2016 certified
- Low energy-consumption, high performance fume hood
- 5° sloped front sash design
- Superior containment at 0.3 m/s face velocity

Available sizes: 4, 5, 6 and 8 ft









Introduction

The Esco Frontier® Acela™ Fume Hood is a high performance, low flow fume hood engineered for safety, performance and energy efficiency, all combined in one multi-featured product. Its ability to operate at a reduced face velocity of 0.3 m/s allows for an exhaust volume reductions of up to 58% as compared to a conventional fume hood. This directly translates to more savings for your company.

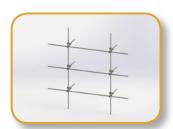
Optional Accessories:



Base Cabinet (EBA)



Circuit board protection



Distillation grid



Service fixtures



Scrubber



Worktop



Sentinel™ XL Airflow **Alarm**



Support Stand (ASL)





Frontier® Acid Digestion™ **Laboratory Fume Hoods**

Features

- Tri-wall Construction
- ASHRAE 110 compliant
- Designed for acid-digestion applications (except perchloric acid)
- Built in u-PVC or PP internal surface and polycarbonate sash

Available sizes: 4, 5, 6 and 8 ft



Introduction

Esco Frontier® Acid Digestion™ Fume Hood is a high performance low flow fume hood designed to handle concentrated acids at high temperatures. This specialized fume hood can be built with unplasticized polyvinylchloride (u-PVC) or polypropylene (PP) internal surfaces which are known for their superior chemical resistance. Sash is made up of polycarbonate material to prevent etching caused by Hydrofluoric Acid.

Optional Accessories:



Base Cabinet (EBA)



Circuit board protection



Service fixtures



Sentinel™ XL Airflow Alarm



Scrubber



Worktop



Support Stand (ASL)



Frontier[®] Floor-Mounted™ Laboratory Fume Hoods

Features

- Tri-wall Construction
- ASHRAE 110 compliant
- Designed for handling large amount of chemicals
- High sash opening

Available sizes: 4, 5, 6 and 8 ft



Introduction

The Esco Frontier® Floor Mounted™ is designed to provide comfortable space when users have to deal with tall apparatus and large hazardous containers that require increased height area.

This fume hood is built with horizontal or vertical sliding sashes for ease of access when transporting apparatus into the hood. The user must not enter the hood while an activity generating hazardous fumes exists or when suspected concentration of fumes exists inside the chamber.

Optional Accessories:



Low Height Base Cabinet (EBF)



Circuit board protection



Service fixtures



Sentinel™ XL Airflow Alarm



Scrubber







AscentTM 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





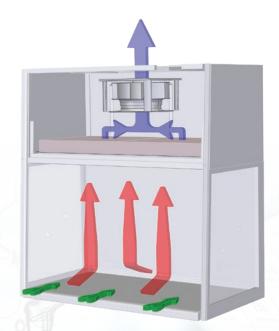
Introduction

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





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:





Optional Accessories:



Mobile Cart



Carbon Filter



AscentTM 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

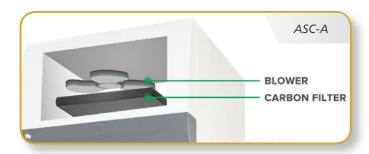


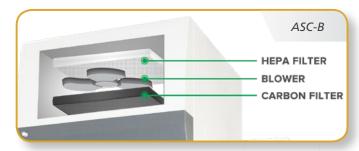


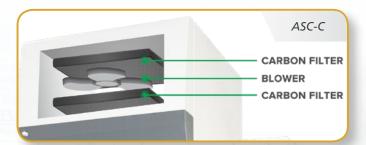
Introduction

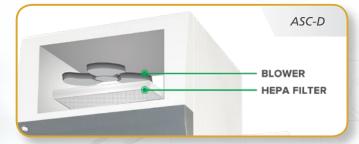
Fumes from chemical containers often result to the storage cabinet's corrosion and contaminated air in the laboratory. Ascent™ storage cabinet is ideal in providing a safe and convenient storage solution. This cabinet is equipped with Nanocarb™ filters that effectively adsorb chemical fumes to provide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

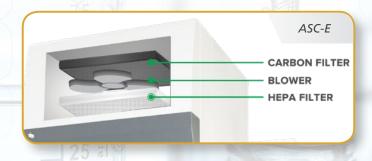
Overview of Models:











ESCO



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







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.



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-toread 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)	
IQOQ	9010179	Installation Qualification Operation Qualification for all models	



CelCulture® CO₂ Incubator

Features

- VivoCell™ Precise Parameter Control
- Infrared (IR) CO₂ sensor
- VentiFlow™ Forced Convection
- SteriSafe™ ULPA filtration system
- SwiftCon™ 90°C moist heat decontamination cycle
- ISOCIDE™ antimicrobial coating
- Gas inlet filter
- Intuitive user interface with data and event logging

Available sizes: 50L, 170L and 240L







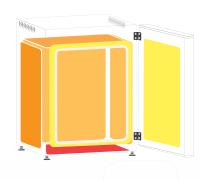


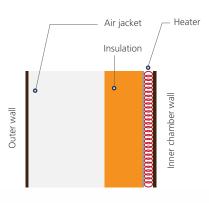


Introduction

 CO_2 incubators are widely used in scientific research to grow and maintain cell cultures. Typical fields of application include tissue engineering and other mammalian cell research applications. Sleek, reliable and intuitive, Esco CelCulture® CO_2 incubators provide complete sample protection that brings your scientific dreams one step closer to reality.

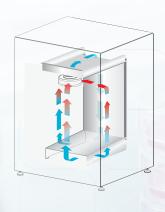
DIRECT HEAT AND AIR JACKET

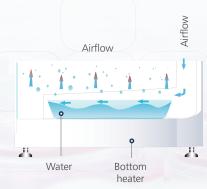




- Direct heating enables rapid temperature recovery while air jacket provides isolation against ambient temperature fluctuations.
- Precise heating in the chamber is achieved by using 8 heaters located in 3 zones.
 The 3 zones are intelligently controlled by the microcontroller for best temperature uniformity and minimal fluctuation.
- The main heater provides precise temperature control.
- The bottom heater warms the water pan and provides humidity.
- The outer door heater prevents condensation on glass door and facilitates temperature recovery.

VENTIFLOW™ FORCED CONVECTION





- No disturbance to cell culture.
- Blower automatically stops when door is opened to minimize mixing of chamber and room air.
- Accelerates recovery of chamber air to ISO Class 5 Cleanliness after door closing to prevent contamination.
- Improves CO₂, humidity and temperature uniformity.
- Filtered air circulates across water pan to accelerate humidifying process.

OPTIONS AND ACCESSORIES



Humidity Display

This option allows the incubator to monitor the relative humidity inside the chamber. The probe for the sensor works in freezing conditions (-70°C) and also in temperatures up to 180°C. The sensor is easy to install and has excellent accuracy. The airflow in the chamber does not affect the measurement. The sensor is maintenance-free. It does not need to be removed during 90°C moist heat decontamination cycle.



CO, Backup

This option allows two tanks of CO_2 to be connected to the incubator. It will automatically switch from the primary tank to the secondary tank when low gas pressure is detected on the primary tank.



Analog Output

A set of relay contacts is provided at the rear of the incubator that allows the incubator to output analog signals representing the temperature, CO_2 / O_2 content and relative humidity, depending on the options available in your incubator. This allows the chamber to be connected to an in-house data acquisition or alarm system. This option can also be field-installed.

The analog signal outputs can be set to operate in either voltage DC (0-5 Vdc) or current (4-20 mA) mode. The factory default setting is voltage. Switch on the board to toggle between the modes.



Sealed Inner Door Kit with 2 glass doors (50L) / Sealed Inner Door Kit with 4 glass doors (170L) Sealed Inner Door Kit with 4 glass doors (240L) / Sealed Inner Door Kit with 6 glass doors (240L)

CelCulture® CO₂ incubators can be equipped with 2, 4 or 6 glass doors, that can be opened horizontally which allows access to defined sections of the incubator without affecting much the inner atmosphere of the chamber. This minimizes recovery time and contamination risks. The sealed-inner door is also reversible as same as the outer door which can be installed to be opened either from-right-to-left or from-left-to right. The sealed-inner door is available as a factory-installed option or field installed retrofit kit.



N, Back-up

This option allows two tanks of N_2 to be connected to the incubator. It will automatically switch from the primary tank to the secondary tank when low gas pressure is detected on the primary tank.



Floor Stand 200 mm (8.0") With Adjustable Feet (240 L)

Floor stands are available with adjustable feet, with a nominal range of 180 mm to 250 mm (7.1" to 9.8") for comfortable access to the incubator and to avoid floor contamination.



2-Stage Gas Regulator for CO₂/N₃

 ${\rm CO_2}$ and ${\rm N_2}$ gas input regulators reduce pressure from the tank to the incubator. It has dual pressure gauges, barbed line connection and shut-off valve. It prevents over-pressurization of the gas supply into the incubator which could cause the tubing to burst.



Extra Shelf (Stainless Steel) for Standard Stainless Steel Chamber

Each CelCulture® CO₂ incubator comes standard with 3 shelves for 50 L / 4 shelves for 170 L & 240L and it can accommodate up to a maximum of 4 shelves for 50 L / 7 shelves for 170 L & 240 L.



Stacking Kit

The stacking kit is a provision to stack one incubator on top of another incubator. Four stacking brackets are included as standard inside the Accessories Kit Box with each incubator.



Electronic CO₂ Analyzer, For CO₂ / Temp Measurement Electronic CO₂ + O₂ Analyzer, For CO₂ / O₂ / Temp Measurement

Electronic CO₂ + O₂ + RH Analyzer, For CO₂ / O₂ / RH / Temp Measurement

The electronic analyzer allows the measurement of CO_2 concentration, O_2 concentration, relative humidity and temperature (temperature probe already included).



6" Chart Recorder, Temp/RH, 115/230VAC 50/60 Hz

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 incubator chamber temperature. This model offers 6" chart of temperature and humidity data.



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





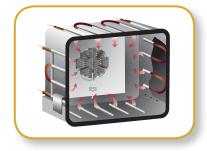
Introduction

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



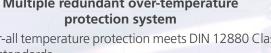
Pre-Heat Chamber Technology

- 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

- 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

OPTIONS AND ACCESSORIES



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



After Sales Services



Parts Availability

Whenever service is needed and parts are required, minimizing downtime is a critical objective. Statistical usage analysis helps Esco to predict parts life, permitting Esco to manage logistics and stage proper inventories around the world. The combination of predictive maintenance, historical data and geospecific proximity assures our customers that parts and labor are available whenever service is scheduled through the local sales organization.

Registration, Documentation and Instruction

Quality control at Esco extends from research and development through engineering, manufacturing, shipment, delivery and customer feedback. Esco maintains an aggressive program to encourage warranty card registration by mail, email or online submission so that we know where Esco products are located and how they are being used. Rest assured that all information disclosed from warranty registrations will be kept confidential. All Esco products include unique serial numbers for identification. Documentation for all performance tests is archived and maintained for customer reference with all the back up procedures.

Online Technical Information

Site preparation instructions are useful before product arrival and installation. Installation and start-up manuals, operation manuals and quick reference guides are available anytime from the Esco resources online.

NSF International Accreditations and TÜV Nord Certification

The National Sanitation Foundation (NSF) International is an independent, non-profit organization that provides standards development, product certification, auditing, education and risk management for public health and the environment.

The NSF mark is your assurance that the product complies with all the standard requirements, tested by one of the most respected independent certification organizations in existence today. NSF conducts periodic unannounced inspections and product testing to verify that the product continues to comply with the standard. It is valued by consumers, manufacturers, retailers and regulatory agencies worldwide.

TÜV NORD GS certification has been helping to minimise risks and hence ensure maximum safety and quality. TÜV NORD's recognised certifications stand worldwide for an exemplary level of safety and make a valuable contribution to the continuing improvement of products and processes.

Esco's passed the stringent requirements during testing and inspection and has given as the TÜV NORD approval mark which confirms compliance of the product with the provisions of the Product and Equipment Safety Act as regards health and safety.

In line with Esco's commitment in providing world class services worldwide, Esco as a manufacturer feels the impact of providing the best after-sales service through our competent service engineers. Thus, Esco is the only manufacturer in the world with the most number of NSF accredited certifiers across the globe. In addition, Esco enhances the capacity to the highest quality of service by providing TÜV NORD GS certified service engineers with expertise to ensure timely preventive and corrective maintenance of the laboratory equipment. These accreditations make Esco not only an Excellent Standards COmpany but also an Excellent Service COmpany, which exemplifies Esco's collective quest of being an Eternally Successful COmpany.

References and Links

For more information, you can visit Esco at www.escolifesciences.com



ESCO LIFESCIENCES GROUP

42 LOCATIONS IN 21 COUNTRIES ALL OVER THE WORLD



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

Esco Technologies, Inc. • 903 Sheehy Drive, Suite F, Horsham, PA 19044, USA Tel: +1 215-441-9661 • Fax 484-698-7757 eti.admin@escolifesciences.com

Esco Lifesciences Group Offices: Bangladesh | China | Denmark | Germany | Hong Kong | India | Indonesia | Italy | Japan | Lithuania | Malaysia | Myanmar | Philippines | Russia | Singapore | South Africa | South Korea | Taiwan | Thailand | UAE | UK | USA | Vietnam

